Effectiveness of inventory management on working capital of Kerala Agro Machinery Corporation Ltd

by

SREEPRIYA R (2015-31-024)

MAJOR PROJECT REPORT

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KERALA, INDIA

2017

DECLARATION

DECLARATION

I, hereby declare that this project entitled **"EFFECTIVENESS OF INVENTORY MANAGEMENT ON WORKING CAPITAL OF KAMCO"** is a bonafide record of research work done by me during the course of minor project work and that it has not previously formed the basis for the award to me for any degree/diploma, associateship, fellowship or other similar title of any other University or Society.

Vellanikkara **SREEPRIYA R (2015-31-024)**

16-10-2017

CERTIFICATE

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CERTIFICATE

*This is to certify that the below mentioned student has done her **INTERNSHIP** in the Athani Unit of this Corporation for the period from 21.08.2017 to 03.10.2017.*

M.C. VIJAYAKUMAR
MANAGER (HR)

To,

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Topic : ***EFFECTIVENESS OF INVENTORY MANAGEMENT ON WORKING CAPITAL OF KAMCO LTD., ATHANI.***

CERTIFICATE

This is to certify that the major project report entitled **"EFFECTIVENESS OF INVENTORY MANAGEMENT ON WORKING CAPITAL OF KAMCO"** is a bonafide record of project work done by Miss.Sreepriya R under my guidance and supervision and she has successfully completed the project, in line with the objective set for the same.

Dr. Philip Thomas
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SREEPRIYA R

(2015-31-024)

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CHAPTER 1

DESIGN OF THE STUDY

1.1 Introduction

The management of working capital is the major area of decision making for financial managers which control every ebb and flow of financial resources circulating in the enterprises in form or another. Efficient management of working capital is an essential pre-requisite for the successful operation of a business enterprise and improving its rate of return on the capital invested in short term asset; such as cash, account receivables, account payables, inventories etc. Management of working capital is very important for the success of a business. It has been emphasized that a business should maintain a sound working capital position and also that there should not be an excessive level of investment in working capital. Working capital refers to the cash a business required for the day to day operation or more specially for financing the conversion of raw materials into finished goods which the company sells for payment. The raw materials, work-in-progress goods and completely finished goods that are considered to be the portion of a business's assets that most business possess, because the turnover of inventory represents one of the primary sources of revenue generation and subsequent earnings for the company's shareholders/owners.

One very important element affecting the profitability of the concern is the investment on inventories. Inventories generally occupy the most strategic position in the structure of the working capital of business enterprise. Inventory management is a science based art of ensuring that enough inventories are held by an inventory to meet its internal and external demand commitment economically.

1.2 Statement of the problem

Liquidity and profitability are two important and major aspects of corporate business life. No firm can survive, if it has no liquidity. Liquidity management is termed as working capital management. A sound financial management is essential at all stages of operation for the efficient working of an organisation. The main factor of financial problem of the public enterprise is the inefficient and ineffective utilisation and management of working capital. Cash, short term investment, inventories, account receivables, account payable are the components of working capital. Among them inventory constitutes a very significant part of working capital or current assets in manufacturing organisation. It is essential to control the inventories (physical /quantity control and value control) as these are the elements in the costing process constituting some times more than 60 per cent of the current asset. The raw materials, work-in -process goods and completely finished goods that are considered to be the portion of a business's assets that is ready or will be ready for sale. Inventory represents one of the most important assets that most business possesses, because the turnover of inventory represents one of the primary sources of revenue generation.

Kerala Agro Machinery Corporation Ltd. (KAMCO) was established in the year 1973 as a wholly owned subsidiary of Kerala Agro Industries Corporation Ltd. (KAIC), Trivandrum, for manufacturer of agricultural machinery specifically Power Tillers and Diesel Engines. Subsequently KAMCO became a separate Govt. of Kerala undertaking in 1986. At present, KAMCO has four units located at Athani and Kalamassery in Ernakulum District, Kanjikode in Palakkad District, and at Mala in Thrissur District. With the present work force KAMCO can produce 8400 Power Tillers ad 1200 Power Reapers per annum. The main objective of the corporation is manufacture and distribution of agricultural machinery includes tractors, tillers, reaper, weeder, brush cutter etc.

Inventory which is one of the important elements of current asset reflects the investment of a firm's fund. Hence it is necessary to efficiently manage inventories in order to avoid unnecessary investment. A firm which neglects the management of inventories will have to face serious problem relating to the long term profitability and may fail to survive. Inventory management is one of the most important aspects

in business. Raw material, goods the company must keep on hand for production, work in progress, it includes any of the goods that are in the production process and finished goods inventory or the products that are ready to ship to customer, all represent various forms of inventory. Each type represents money tied up until the inventory leaves the company as purchased products. Successful inventory management involves balancing the cost of inventory with the benefits of inventory. Efficient management of working capital naturally calls for efficient management of all its components. Out of the components of working capital, inventory occupies a significant portion of the working capital and inventory management possesses the most challenging task for the management. This leaves sufficient scope for introspection for KAMCO regarding the effectiveness in the management of inventories. So a study toward the effectiveness of inventory management is particularly significant to KAMCO, hence the study is focused on the inventory management system.

1.3 OBJECTIVE

The main objectives of this study are as follows

a) To evaluate the inventory management policies and practices of KAMCO Ltd.

b) To analyse the impact of inventory management on working capital of KAMCO Ltd.

1.4 METHODOLOGY

1.4.1 Period of the study

The study was conducted from 21st July.2017 to 3rd October 2017.

1.4.2 Data Collection

Both primary and secondary data was collected for the study. The primary data was collected from concerned officials, with the help of using a structured interview

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schedule. The secondary data collected from the books of accounts and yearly reports of KAMCO

1. Balance Sheet
2. Turnover Statements
3. Monthly Inventory Statements
4. Company Records
5. Internet

1.4.3 DATA ANALYSIS

The study on the existing inventory management practices was done by using the records of the organisation as well as by interviewing the concerned officials of KAMCO. Efficiency of inventory management is studied by using statistical tools like ratios, correlation, regression, percentage, average annual growth rate, compound annual growth rate, index value

1.5 SCOPE OF THE STUDY

The study is helped to understand the inventory management in Kerala Agro Machinery Corporation Ltd and working capital management in KAMCO Ltd. It facilitates to know the impact of inventory management on working capital. By analysing the policies and the inventory management system in KAMCO aid to formulate the organisational as well as government policies for the effective running of the KAMCO

1.6 LIMITATIONS OF THE STUDY

This study is limited to KAMCO, so it cannot be generalised.

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1.7 Chapterisation of the study

The study is presented in six chapters. The first chapter Design of the Study covers introduction, statement of the problem, research objectives, methodology, scope, limitation and scheme of the study. The second chapter Review of Literature examines the research gap. The Conceptual framework of the study is presented in chapter in three. The fourth chapter presents the profile of the study organisation-KAMCO. The efficiency of the inventory management and the impact on profitability and working capital is covered in fourth chapter. The last chapter concludes with the summary of findings, conclusions and suggestions.

CHAPTER II

REVIEW OF LITERATURE

Inventory managers are concerned with cost, criticality and contribution of their holdings. Ordering and maintaining inventory has several costs. These include capital costs, administrative expenses, storage charges, shrinkage, taxes and insurance. Most of these vary directly with the average quantity of inventory held. An obvious strategy for cost avoidance would be to reduce or eliminate inventories. That probably cannot be done in very many cases. Most Firms in USA, West and Eastern Europe determine the level of inventory necessary to provide an acceptable level of customer service and manage that size inventory as efficiently as possible.

In the following few paragraphs, an attempt is made to analyse some of the relevant studies made so far in the field of working capital and inventory management.

According to Swamy (1987), inventory represented more than 61 percent of the total current asset of the concerns. At the same time inventories stood at more than 108 percent of the net working capital of the under takings taken together. Moreover, the rate of growth of inventory in the selected public enterprises has been very high. Swami concluded that the existing system of materials management in public undertaking is not satisfactory and needs improvement in the directions without delay.

According to Bardie (1988), he opines that for a firm to be successfully, the proportion of inventory to current asset should be kept at the minimum. Also a high inventory turnover ratio which indicates faster movements of materials is advantageous to the firm. He also points out the proportion of finished/semi-finished inventory should be kept at minimum.

According to Jain (1988), he has highlighted various facets of working capital management in the state of Rajasthan. He opined that the cash position of working capital should be improved by reducing inventories and efficient collection of debts.

According to Mohan Reddy (1991), he concluded that the inventory formed the major chunk of current asset of the sample private sector enterprises studied. Bigger enterprises in the private sector carried the larger inventories as compared to the smaller ones. Inventory turnover ratio of all the units recorded improvement over the period under the reference. Besides, an analysis of output inventory,inventory turnover ratios had shown that none of the private sector units had carried on inventory unduly in the aggregates.

According toThomas (2002), studies inventory changes and future returns with data from 1970 through 1997. He finds that a firm with inventory increase has experiences higher level of profitability, however, this trend changes immediately with a change of inventory decrease. He finds the negative relationship between inventory level and firm's profitability but he cannot explain the reason.

According to Antony (2003), inventory management is an important activity towards ensuring smooth production process. Accounting information plats a key role in inventory management. Just-in-time (JIT) manufacturing involves purchasing the raw materials and going ahead with the production process as and when the demand arises. JIT is an approach towards minimising waste and maximising productivity. The costing system associated with JIT manufacturing is known as 'back flush' coasting.

According to Anil (2003), an effective inventory management framework seeks to optimize the available resources towards enhancing the productivity levels. It also helps to keep distribution and logistics costs under control and hence evolves cost-efficient avenues for production.

According to Waters (2003), firms uses Just in Time method of inventory management hence keep zero or very minimal inventory at all.Customer service requirements of manufacturers and re-sellers are different; therefore their inventory maintenance policies differ. Manufacturers are primarily concerned with efficient utilization of their production facilities. They maintain raw materials inventory to prevent production line interruption due to lack of inputs. Manufacturers favour long production runs to achieve production economies of scale this is what is mostly being

applied in the firms which do their manufacturing in countries like China, South Korea, Hungary and Vietnam. This results in fairly large holdings of both raw materials and finished goods at the manufacturing level.

According to Deloof (2003) and Wang (2002), emphasized that the way the working capital is managed has a significant impact on the profitability of firms. This implies that working capital management is one of the fundamental decisions that a finance manager makes. Further, working capital is known as life-giving force for any economic unit and its management is considered among the most important function of corporate management. Every organization whether profit oriented or not, irrespective of size and nature of business, requires necessary amount of working capital.

According to Kannan and Tan (2004), point out the three popular methods used in order to ensure that the product orservice is delivered to the customer in the most efficient way possible. These three methods areJIT, Total Quality Management (TQM), and SCM. All three of these methods go hand in handbecause they force the company to eliminate waste while increasing the quality of their productsand distribution systems. Their research demonstrates that integrated inventory managementmethods are correlated with firm financial performance. Using return of assets (ROA) as ameasure of financial performance. They also point out set out to not only reiterate the impacton firm's operational performance, but also point out that the firm's business performance canbenefit from an inventory management system. Their results concluded that integrating atechnological inventory management system results in higher ROA.

According to Wanke (2004), states that inventory management approaches are a "function of product, operational and demand related variables such as delivery time, obsolescence, coefficient of variation of sales and inventory turnover" and that logistics managers are more likely to decentralize inventory in order to stock product close to the customer's facility if the customers demand a reduced delivery time.

According to Chen et.al(2005), investigates inventories of U.S. manufacturing companies in the last two decades of 20th century. They find that firms with high inventory have poor long-term stock returns while firms with slightly lower than average inventory have good stock returns. However, firms with lowest inventory have only normal returns. All four papers study about the relationship with financial performance of U.S. manufacturing industry. But their results are not consistent. The data used in the previous four papers are data of 20th century.

According to Michael Quayle (2006), increasingly integrating financial data such as accounts receivable with sales information that includes customer histories is what most firms do. The goal is to control inventory quarter to quarter so it doesn't come back to bite the bottom line. Key components of an integrated system are general ledger, electronic data interchange, database connectivity and connections to a range of vertical business applications.

According to Graman (2006), argued that today, the cost of holding inventory, extensive product proliferation and the risk of obsolescence, especially in rapidly changing markets, make the expense of holding large inventories of finished goods excessive and that high demand items naturally have safety stock assigned to them but in many organizations there are so many very-lowdemand items that keeping any stock of these items is unreasonably expensive, so they argue that companies must now provide good service while maintaining minimal inventories. Therefore, inventory management approaches are essential aspects of any organization.

According to Smitha (2006), in her study about working capital management of Malabar Cements Limited came to the conclusion that, heavy accumulation of work in progress was one of the reasons for poor working capital turnover ratio of the company. The work-in progress turnover was lower than the industry averages throughout the study period. Poor work-in-progress inventory turnover ratio of the company revealed the laxity on the part of the management in controlling the production processes, which resulted in the inefficient use of working capital of the firm, adversely affecting the profitability of the firm. On the other hand, there was inadequate quantity of finished goods inventory which might leads to loss of customers to the company, if corrective action was not taken.

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According to Roumiantsev and Netessine (2007), investigated linkage of inventory behaviour with financial performance. They found that lower inventory levels are positively associated with return on sales.

According to Shah and Shin (2007), investigate the relationship among IT investment, inventory, andfinancial performance with industry sector level data of 1960 to 1999. They find that lowerinventory levels lead to higher financial performance in manufacturing sector. Their conclusionis that there exists indirect effect on financial performance through inventory management fromIT investment.

According to McPharson (2007), in apparel manufacturing, "inventory management systems are designed to obtain concise and accurate information for control and planning of planned goods, issues, cuts, projections, WIP and finished goods." Inventory management has been a concern for academics as well as practitioners, in that overall investment in inventory accounts for relatively large part of a company's assets. Inventories tie up money, and success or failure in inventory management impacts a company's financial status. Having too much inventory can be as problematic as having too little inventory. Too much inventory requires unnecessary costs related to issues of storage, markdowns and obsolescence, while too little results in stock out or disrupted production.

According to Tersine et.al (2008), traditionally, inventories caused conflicts between functional units within a company or between the companies. For example, within a company, purchasing, production, and marketing people want to build a high level of inventory for raw material cost reduction, efficient production run, and customer service level, while warehousing and finance people want to reduce the inventory level for storage space and economic reasons. As global competition between suppliers in the open markets has increased, power has been shifted from suppliers to customers. Therefore the customer's need to reduce the inventory based on frequent small lot orders has resulted in their partners holding the inventory.

According to Branam (2008), factors which management should consider for better inventory management. Specifically emphasized the importance of in-plant

throughput time reduction because throughput time is the ultimate constraint on inventory turnover ratio (inventory turnover ratio = annual cost of goods sold/average on hand inventory), which is one of the major performance indicators in inventory management. The author's interpretation of the in-plant throughput time is the time span from the point of raw material receipt to final assembly. The factors for better inventory management as better forecasting, improved transportation, improved communication, improved technology, better scheduling, and standardization.

According to Capkun et al. (2009), found a significant positive correlation between inventory performance and measures of financial performance in manufacturing companies over 26 year period from 1980 to 2005.Profitability is a concept that a lot of executives and shareholders put emphasis on. This shows them that their company is operating at a level to where more money is coming in than leaving the company.

According to Pachura (2009), he suggested that management should start the process of improving inventory management by determining the manufacturing type, benchmarking the inventory control performance, validating strategy (i.e, make-to-order, make-to –stock and build-to- forecast),determining underlying causes through the use of an operational reveiew, and implementing corrective action. He suggested specific techniques for inventory management by focusing on cycle time, improved communication, supplier relationships, production scheduling, and cross- functional approach within a company.

According to Adeyemi and Salami (2010), they conducted a study of Coca-Cola Bottling Company, Iorin plant, Nigeria, for evaluating the inventory management system. The study revealed that inventory problems of too great or too small quantities on hand can cause business failures. If a manufacture experiences stock-out of a critical inventory item, production halts could result. Moreover, a shopper expects the retailer to carry the item wanted. If an item is not stocked when the customer thinks it should be, the retailer loses a customer not only on that item but also on many other items in the future. The conclusion to a company's profit as well as increase its return on total assets.

According to Slack et al.(2010), a company recognizes that customer satisfaction is an important key to success. Also term that the customer is always the "king" thus the organization ensures the availability of materials in the store so as to prevent any disruption during production processes. The company recognizes that customer satisfaction in a manner that the Inventory control managers defines how often inventory levels are reviewed to determine when and how much to order. It is performed on either a perpetual or a periodic basis. Inventory manager's implements inventory policy, they use customer demand to pull product through the distribution channel and an alternative philosophy used in the organization which allocates inventory on the basis of forecasted demand of product availability.

According to Gill et al. (2010), discusses the relationship that occurs between the firm's working capital management and profitability. They define working capital as being involved with current assets and current liabilities while being able to finance these current assets. The main difference between inventory management and working capital management is the fact that working capital management involves managing all of the current assets while inventory management focuses its efforts on inventories alone.

According to Rajeev (2011), he analysed Inventory management in small & medium enterprises and mentioned that there was a positive relationship between inventory and sales and between inventory and production cost. This does not imply that inventory automatically determines production costs or sales and vice-versa. However, it does show that inventory levels can be a useful indication of what level of sales to expect. It is thus recommended that the sales and marketing department of the company should pay closer attention to the growth pattern of inventory usage and incorporate it in sales forecasting technique.

According to Leong (2012), Inventory management or control refers to a planned method of purchasing and storing the material to prevent stock out. Organization uses inventory control to minimize idle time caused by shortage of inventory and non-availability of inventories as per requirement to keep down capital investment in inventory.

According to James (2016) describes Inventory represents an important decision variable at all stages of product manufacturing, distribution and sales, in addition to being a major portion of current assets of many organizations. Too much and too low inventories bring down the level of profitability of an organization.The study wanted to determine the effects of inventory control on profitability of industrial and allied firms in Kenya. It was explained by economic order quantity model (EOQ) which is based on minimization of costs between stock holding and stock ordering. Co relational research design was adopted. Two types of data were collected. Primary data was collected through the use of a questionnaire and secondary data through the use of a record survey sheet. A sample of 71 industrial and allied companies was determined using stratified random sampling technique from a target population of 399 industrial and allied firms in Nairobi City and her environs. Data collected was analyzed at two levels; descriptive and inferential data analysis.

It is recommended that firms should install and maintain good inventory control systems such as Economic Order Quantity (EOQ) and Just in Time (JIT). This should ensure that firms are maintaining ideal levels of inventory that have an effect of increasing profitability of the firms. The management should ensure that the staffs are qualified to perform duties assigned and ideal inventories levels are maintained. It should also ensure that the staffsare maintaining accurate inventory records.

Conclusion

The above mentioned review clearly states about the relevance of working capital and inventory management. Inventory constitutes a very significant part of working capital or current assets in manufacturing organisation. But so far no other studies have been conducted on the topic "Effectiveness of inventory management on working capital of KAMCO Ltd". So this study focused the effectiveness of inventory management is particularly significant to KAMCO, for the analysis of inventory management system.

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CHAPTER III

EFFECTIVENESS OF INVENTORY MANAGEMENT ON WORKING CAPITAL- A CONCEPTUAL FRAME WORK

3.1 Introduction

Working capital is the capital invested different items of current assets needed for the business, viz., inventory, debtors, cash, and other current assets such as loans and advances to the third parties. These current assets are essential for smooth running of business operation and proper utilisation of fixed assets. The firm should maintain sufficient level of working capital to produce up to a given capacity and maximise the return on investment on fixed assets. Shortage of working capital leads to lower capacity utilisation, lower turnover and hence lower profits. Working capital management is the process of planning and controlling the level and mix the current asset of the firm as well as financing these assets. Specifically, working capital management requires financial managers to decide what quantities of cash, other liquid assets, account receivables and inventories the firm will hold at any point of time. In addition, financial managers must decide how these current assets are to be financed.

3.2 Concept of Working Capital

There are two concepts of working capital, namely Gross concept and Net concept.

3.2.1 Gross Working Capital

According to this concept, working capital refers to the firm's investment in current assets. The amount of current liabilities is not deducted from the total of current assets. This concepts views working capital and aggregate of current assets as two inter –changeable terms. This concept is also referred to as 'Current

Capital' or 'Circulating Capital'. It refers to the sum total of all current assets of the employed in the business process.

3.2.2 Net Working Capital

The net working capital refers to the difference between current assets and current liabilities. Current assets are cash in hand, cash at bank, short term securities, bills receivables, prepaid expenses which can be converted into cash within year. Current liabilities are those claims of outsiders, which are expected to mature for payment within an accounting year and include creditor's dues, bills payable, bank overdraft and outstanding expenses. Net working capital can be positive or negative. A negative net working capital occurs when current liabilities are in excess of current assets.

3.3 Importance of working capital

Because of its close relationship with day-to-day operations of a business, a study of working capital and its management is of major importance to internal, as well as external analysis. It is being increasingly realised that inadequacy or mismanagement of working capital is the leading cause of business failures. We must not lose sight of the fact that management of working capital is an integral part of the overall financial management and, ultimately of the overall corporate management. Working capital management thus throws a challenge and should be a welcome opportunity for a financial manager who is ready to play a pivotal role in his organisation.

Neglect of management of working capital may result in technical insolvency and even liquidation of a business unit. With receivables and inventories tending to grow and with increasing demand for bank credit in the wake of strict regulation of credit in India by the Central Bank, managers need to develop a long –term perspective for managing working capital. Inefficient working capital management may cause either inadequate or excessive working capital, which is dangerous. Due to inadequate working capital the growth may be stunted .It may become difficult for the firm to undertake profitable projects due to non-availability of funds. Excess of working capital may result in unnecessary accumulation of inventories, increasing the chances of inventory mishandling, waste, and theft.

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3.4 Components of working capital

The level of investment in working capital is predicted by the factors influencing the components of current assets i.e., Receivables, Cash, Inventories and other current assets.

3.4.1 Receivables

Receivables are asset accounts representing account owned to the firm as a result of sales of goods or service in ordinary course of business. Firms rather prefer to sell for cash than on credit, but competitive pressures force most firms to offer credit. Selling goods or providing services on credit basis leads to accounts receivable.

3.4.2 Cash

Cash is the basic input to start any business. Cash is initially required for acquiring fixed assets like plants and machinery which enables a firm to produce products and generate cash by selling them. Cash is also required and invested in working capital. Investments in working capital are required, as firms have to store certain quantity of raw materials and finished goods and also for providing credit terms to the customers.

3.4.3 Inventories

Inventory constitutes a very significant part of working capital or current assets in manufacturing organisation. Inventory which consists of raw material components and other consumables, work in process and finished goods, is an important component of 'current assets'. There are several factors like nature of industry, availability of material, technology, business practises, price fluctuation, etc. That determines the amount of inventory holding. Holding inventory ensures smooth production process, price stability and immediate delivery to customers. Inventory represents a large portion of the business investment and must be well manage and in order to maximise the profits. An undertaking neglecting the management of inventories will be jeopardizing its long run profitability and may fail ultimately. Therefore, there must exist some optimum inventory policy which balances the

demands of the production and transportation facilities and the implementation of excessive inventory.

3.5 Objectives of inventory management

In the context of inventory management, the firm is face with the problem of meeting two conflicting needs.

1. To maintain a large size of inventory for efficient and smooth production and sales operation
2. To maintain a minimum investment in inventories to maximise profitability.

Both excessive and inadequate inventories are not desirable. They are the two danger points with in which the firm should operate. The objective of inventory management should be to determine and maintain the optimum level of inventory investment. The firm should avoid situation of over investment and under investment in inventories. The investment in inventories should be just sufficient at the optimum level. The major dangers of over investment are (a) unnecessary tie up of the firm's funds and loss of profit (b) excessive carrying cost and (c) the risk of liquidity. Excessive inventories carried for a long period increases the chances of loss of liquidity. It may not be possible to sell the inventories in time and at full value. Another danger for carrying the excessive inventory is the physical deterioration of the inventories while in storage. In case of certain goods or raw material deterioration occurs with the passage of time, or it may be due to the mishandling and improper storage facilities. These factors are within the control of management, the unnecessary investment in inventories can, thus, be cut down.

Maintaining an inadequate level of inventories is also dangerous. The consequences of under investment are: (a) production hold up and (b) failure to meet the delivery commitments. In adequate raw materials and work in process inventories will result in frequent production interruptions. Similarly, if the finished goods inventories regularly, the customers may shift to the competitors, which will amount to a permanent loss of the firm.

The aim of inventory management thus should be to avoid excessive and inadequate levels of inventories and to maintain sufficient inventory for the smooth operation and the sales operations. Efforts should be made to place an order at the right time with the right source to acquire the right quantity at the right price and quality. An effective inventory management should

- Ensures a continuous supply of materials to facilitate the uninterrupted production
- Maintain sufficient stock of raw materials in period of short supply and anticipate the price changes.
- Maintain sufficient finished goods inventory for smooth sale operation and efficient customer services
- Minimize the carrying cost and time and
- Control investment in inventories and keep it at optimum level

3.6 Tools and Techniques of inventory management

Efficient inventory management requires an effective control system for inventories. A proper inventory control not helps in solving the acute problem of liquidity but also increases profits and causes substantial reduction in the working of the concern. In managing the inventories, the firm's objective should be in consonance with the wealth maximisation principle. To achieve this, the firm should determine the optimum level of inventory. Sufficient inventories should be maintained, neither excess nor adequate. Efficiently controlled inventories make the firm flexible inefficient inventory control result in unbalanced inventory and flexibility; the firm may be sometimes out of stocks and sometimes may pile up unnecessary stocks. This increases the level of investment and the firm unprofitable.

The various techniques applied for inventory management are as follows,

3.6.1 Setting up of various stock level

If the inventory level is too little, the firm will face frequent stock out involving heavy ordering cost and if the inventory is too high it will be unnecessary tie up of capital. Therefore an efficient inventory management requires that a firm should maintain an optimum level of inventory costs are the minimum and at the same time there is no stock out which may result in loss of scale or stoppage of production. The various stock levels fixed for effective management of inventories are maximum level, minimum level, ordering or reordering level, and danger level. The level serves as indices for initiating action on time so that the quantity of each time of material i.e, the inventory holding is controlled. Stock levels are not fixed on a permanent basis but are liable to revision in accordance with the changes in the factor determining the levels.

i) Minimum level

This represents the quantity, which must be maintained in hand at all time. If stocks are less than the minimum level then the work will stop due to shortage of materials. The nature of material also affects the minimum level. If a material is required only enough against special orders of the customer then the minimum stock will not be required for such materials. Minimum stock level can be calculated as,

Minimum stock level = Re-ordering level – (Normal consumption x Normal Re order point).

ii) Re ordering level:-

Re ordering level is fixed between minimum level and maximum level. The rate of consumption, number of days requires replenishing the stocks and maximum quantity of materials required on any date are taken into account whole fixing. Re-order level is fixed as,

Re order level = (Maximum consumption x Re order period).

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iii) Maximum level:-

If the quantity of materials beyond which a firm should not exceed its stocks. If the quantity exceeds the maximum limit, it will be overstocking. A firm should avoid over stocking because it will result in high material cost.

Maximum stock level = Re ordering level +re ordering quantity –

(Minimum consumption x minimum re ordering period)

iv) Danger level:-

It is the level beyond which materials should not fall in any cases. If danger level arises the immediate steps should be taken into replenish the stock even if more cost is incurred in arranging materials. If the materials are not arranged immediately there is a possibility of stoppage of work.

3.6.2 ABC Analysis

Always Better Control (ABC) Analysis

One of the most widely recognised concepts of inventory management is referred to as ABC inventory control. The firm should pay maximum attention to those items whose value is the highest. The firm should therefore classify inventories to identify which item should receive the most effort of the firm in controlling. Thus the firm should be selective in its approach to control investment in various types of inventories. This analytical approach is called the approach and tends to measure the cost significance of each item of inventories.ABC approach is a means of categorizing inventories, items into three classes "A", "B", and "C" according to the potential amount to be controlled. When items have been classified, appropriate control techniques, are developed for each class of inventory.

Inventories classified into three broad categories A, B, C

a) Category A, representing the important items generally consist of 15 to 25% of inventory items and accounts for 75% of annual usage value.
b) Category B, representing items of moderate importance generally consist of 20 to 30% inventory items and account for 20 to 30% of annual value.

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c) Category C, representing items of least importance generally consist of 40 to 60% of inventory items and accounts for 10 to 15% of annual value.

It is based on the empirical reality, advocates in essence a selective approach to inventory control, which calls for a greater concentration of effort on inventory items according for the bulk of usage value. It helps to exercise selective control and focus attention only on a few items, when there is large number of items. By controlling the A item and doing proper inventory analysis obsolete sticks are automatically pinpointed.

3.6.3 Perpetual Inventory System

A perpetual inventory system, or continuous inventory system, is an inventory control system that allows businesses to keep a real-time account of inventory on hand. The widespread use of computers after the 1970s increased this systems popularity because businesses were able to more easily keep track of inventory as it sold. Barcodes, radiofrequency identification scanners (known as RFID), and point of sale systems (also known as POS) provided support for this system by quickly inputting inventory information as customers purchase items.

Advantages of the Perpetual Inventory System

Perpetual inventory systems are common in many modern businesses. They are most often found in large businesses, businesses with multiple locations, or businesses that carry expensive products, such as a jewellery or electronics store. While errors in inventory occur due to loss, breakage, theft, improper inventory tracking, or scanning errors, there are many advantages to using a perpetual inventory system:

a) Prevents stock outs; a stock out means that a product is out of stock.
b) Gives business owners a more accurate understanding of customer preferences.
c) Allows business owners to centralize the inventory management system for multiple locations.

d) Provides greater accuracy due to each inventory item being recorded on a separate ledger.
e) Gives valuable information to business owners, such as discounts, purchases, and returns.
f) Reduces physical inventory count.

3.6.4 Just- In-Time

Just in time (JIT) inventory is a management system in which materials or products are produced or acquired only as demand requires. This approach to managing inventory has become increasingly popular in the early 21st century as suppliers and retailers collaborate to try to control inventory costs while still meeting customer demands.

Just in time inventory is intended to avoid situations in which inventory exceeds demand and places increased burden on your business to manage the extra inventory. Manufacturers using JIT processes want to use materials for production at levels that meet distributor or retailer demand but not in excess. Retailers only want to acquire and carry inventory that meets immediate customer demand. Excess inventory requires storage and management costs. Companies use a Just-in-Time manufacturing and inventory management system to improve the efficiency of the company and reduce costs.

The system requires manufacturers to purchase only when customer orders create a demand. Companies must develop a relationship with vendors to ensure parts reach the facility in time to manufacture products for the customer request. Businesses only produce inventory when there is a customer order in place. The system does not allow the business to produce or store excess inventory. Just-in-Time systems work in large and small organizations and those that produce products or services. With adjustments, the principles of Just-in-Time inventory management and manufacturing can work in any business.

3.6.5 VED Analysis

VED stands for vital, essential and desirable. This analysis relates to the classification of maintenance spare parts and denotes the essentiality of stocking

spares. The spares are split into three categories in order of importance. From the view-points of functional utility, the effects of non-availability at the time of requirement or the operation, process, production, plant or equipment and the urgency of replacement in case of breakdown.

Some spares are so important that their non-availability renders the equipment or a number of equipment in a process line completely inoperative, or even causes extreme damage to plant, equipment or human life. On the other hand some spares are non-functional, serving relatively unimportant purposes and their replacement can be postponed or alternative methods of repair found. All these factors will have direct effects on the stocks of spares to be maintained. Therefore, it is necessary to classify the spares in the following categories:

V: Vital

Vital items which render the equipment or the whole line operation in a process totally and immediately inoperative or unsafe; and if these items go out of stock or are not readily available, there is loss of production for the whole period.

E: Essential

Essential items which reduce the equipment's performance but do not render it inoperative or unsafe; non-availability of these items may result in temporary loss of production or dislocation of production work; replacement can be delayed without affecting the equipment's performance seriously; temporary repairs are sometimes possible.

D: Desirable

Desirable items which are mostly non-functional and do not affect the performance of the equipment.

As the common saying goes "Vital Few — trivial many", the number of vital spares in a plant or a particular equipment will only be a few while most of the spares will fall in 'the desirable and essential' category.However, the decision regarding the stock of spares to be maintained will depend not only on how critical the spares are from the functional point of view (VED analysis) but also on the annual consumption

(user) cost of spares (ABC - analysis) and, therefore, for control of spare parts both VED and ABC analyses are to be combined.

3.6.6 FSN Analysis

FSN Analysis is part of Inventory Management in Logistics and Supply Chain Management System. In the case of spare parts management in inventory it is necessary to analyse the data based on several parameters such as the rate of issuing of spare parts, amount consumed annually, lead time, price of single unit etc. The analysis is important because ofthe reason that controlling the inventory might not be same for all parts. Inventory control allows selectively controlling the amount of items in stock.

The FSN Analysis is based on the rate of issue or rate of usage of spare parts and the alphabets F S and N stands for Fast Moving, Slow Moving and Non Moving items. The FSN classification system categorizes the items based on how frequently the parts are issued and how frequently they are used.

Usual classification of Items at Inventory can be classified based on the following criteria

Fast Moving – Items which are frequently issued from inventory which are more than once for a specific time period.

Slow Moving – Items which are less frequently issued which might be once in a specific time period

Non Moving – Items which are not issued from the inventory at all in a specific time period

The FSN classification system is extremely helpful in distributing spare parts which are kept near the dispensing are having items which belong to the fast moving category. The items which fall into the non-moving category can be discontinued if further scope of use is not expected. As companies in production for longer period have a specific percentage of non-moving spare parts which are usually disposed at

regular intervals. Selling the spare parts or reusing the same can be a gain in capital which can be used for other uses.

3.6.7 Periodical Inventory Valuation

A periodic inventory system is an inventory system that updates inventory at the end of a specified period of time. This may mean that they update their inventory records at the end of each month, quarter, or year. Whenever the period ends, it generally coincides with the end of a reporting period, or a timeframe for which a report is drawn on all financial activities that occurred during that time. Common reporting periods conclude on a quarterly or annual basis.

Since a periodic inventory system only keeps track of inventory periodically throughout the year and not as inventory is purchased or sold, a physical count of the inventory must be conducted. A physical count is a complete and exact count of each item in the inventory done by hand. Some businesses carry hundreds or thousands of products, so physical counts can be extremely time-consuming. Even for businesses that carry few products, physical counts can be tedious and may take a lot of time to complete if problems, such as missing parts or wrong counts, arise.

When a physical inventory count is done, the balance in the purchases account is then shifted into the inventory account, which in turn is adjusted to match the cost of the ending inventory.The calculation of the cost of goods sold under the periodic inventory system is:

Beginning inventory + Purchases = Cost of goods available for sale

Cost of goods available for sale – Ending inventory = Cost of goods sold

3.6.8 EOQ (Economic Ordering Quantity)

The EOQ is an important concept in the purchase of raw materials and in the storage of finished goods and in transit inventories. If the quantity ordered at time is quite, large the number of orders will be less. As a result the average inventory holding will be high and this will leads to high inventory carrying cost. But with the limited number of large orders, the fixed cost of ordering incurred each year will be less. If the other extreme of placing small orders frequently is considered the average inventory held will be small and therefore the inventory carrying cost will also be

low. Since orders are placed frequently, the fixed ordering cost incurred each year will be high. It is the apparent here that this cost move in opposite direction.

Let 'A' be the annual consumption of an item in rupees, 'S' the ordering cost per order (for purchase item) and 'I' the inventory carrying cost as a percentage of the inventory cost. If 'Q' expressed in rupees, represents the minimum quantity order at a time or the minimum cost of inventory, the average inventory will be Q/2 rupees and the inventory carrying cost will be Q1/2 rupees per annum. The number of orders per year will be AS/Q rupee. For minimum cost inventory, these costs are equal.

Q1/2 = AS/Q

Q^2 = 2AS/I

Q = 2AS/I

Where Q= the optimal ordering quantity/ EOQ

A = annual consumption value of item

I = inventory carrying cost

3.7Determination of safety stock

Safety stock is a buffer to meet some unanticipated increase in usage. The usage of inventory cannot be perfectly forecasted; it fluctuated over a period of time. The demand for materials may fluctuate and delivery of inventory may also be delayed and in such a situation the firm can face a problem of stock out. The stock out can prove costly by affecting the smooth working of the concern. In order to protect against the stock out arising out of usage fluctuation firms usually maintain some margin of safety or safety stock. Two costs are involved in the determination of this stocks i.e., opportunity cost of stock out and the carrying cost. The stocks out raw materials cause production disruption resulting into higher cost of production.

3.8 Ordering system of inventory

The basic of inventory is to decides the re order point. The point is determined with the help of (a) average consumption rate (b) duration of lead time (c) economic order quantity. When the inventory is depleted to lead time consumption the order should be placed.

3.9 Identification of inventory carrying cost

The essence of any inventory analysis rests with the identification of the relevant costs which are known as the inventory costs.

- Ordering cost: - this term is used in case of raw materials and includes the entire cost of acquiring raw materials. The ordering cost increases in proportion to the number of orders placed. This cost includes,

1. Cost of staff posted for ordering of goods. A purchase order is processed and the order is placed with suppliers. The labour spent on this process is included in ordering costs.
2. Expenses incurred on transportation of goods purchased.
3. Inspection costs of incoming materials.
4. Cost of stationery, typing, postage, telephone charges etc.

- Carrying cost- the cost which are incurred for holding a given level of inventory are called carrying cost. They include,

1. Opportunity cost of funds invested in inventories
2. Insurance and tax
3. Storage cost, any labour excluding handling of receipts of new orders ie, cost of provision of storage area and facilities likes bins, racks etc.
4. Allowance for deterioration or spoilage
5. Salaries for staff
6. Obsolescence.

- Stock out cost/Under stocking cost

  This cost is incurred when demand occurs and when the system is out of stock. In other words it is the cost of not carrying inventory. This can lead to one of the two possible outcomes. The first is that out of stock position will lead to back order, the firm does suffer some costs in this situation including some tangible liker loss of customer, good will etc. The second possible outcome of

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an out of stock position is the loss of sales. Here the cost is much more severe includes loss of goodwill, loss profit on sales of other time or on future sales of the given time.

3.10 Factors determining the optimum level of inventory

General factors

1. Nature of business
2. Anticipated volume of sales
3. Operation levels
4. Price level variation
5. Availability of funds
6. Attitude of management

Specific factors

1. Seasonal nature of raw materials and demand of finished goods.
2. Length of technical nature of production process
3. Durability of perishability
4. Terms of purchase
    i) Loan credit
    ii) Conditions of supply
    iii) Rebate/ discount
5. Time factor
6. Lead time
7. Time lag
8. Time required for production process
9. Average time required for sale
10. Management policies.

CHAPTER IV

COMPANY PROFILE

4.1 About the company

Kerala Agro Machinery Corporation Ltd. (KAMCO) was established in the year 1973 as a wholly owned subsidiary of Kerala Agro Industries Corporation Ltd. (KAIC), Trivandrum, for manufacturer of agricultural machinery specifically Power Tillers and Diesel Engines. Subsequently KAMCO became a separate Govt. of Kerala undertaking in 1986. Paid up capital is Rs.161 lakhs and the present net worth of the company is Rs.6014.14 lakh.Total work force at present is 567. Company is certified for ISO 9001-2000 version from September 2002.

At present, KAMCO has four units located at Athani and Kalamassery in Ernakulam District, Kanjikode in Palakkad District, and at Mala in Thrissur District. With the present work force KAMCO can produce 8400 Power Tillers ad 1200 Power Reapers per annum.

KAMCO manufacturing facilities include special purpose machines and importedmachines.The inspection facilities include modern inspection and testing equipment KAMCO
have their own methodology, calibration and engine testing lab.KAMCO an ISO 9001:2000 is fully owned Government of Kerala under the ministry ofagriculture. KAMCO is engaged in manufacturing small agricultural machine mainly indentedfor small and marginal farmers in the country in the country established in 1973; the companyhas now completed 30 years of services.

Company has got for manufacturing units now inAthani, Kalamassery, Mala and Kanjikode. Athani unit is also the Registered Office of thecompany. At present company employees approximately 750 persons in four units. Thecompany is working profitably for the past fifteen years. The company was incorporated with theintention of manufacturing and marketing agricultural machines useful for small and marginal farmers. Companys products are 9 to 12 HP kerosene. Athani, Palakkad

and Kalamassery unitsmanufactures Power Tillers and Mala unit manufactures Power Tillers and Power Reapers.

The company enjoys the position of premier manufacture in its fields. The productsmanufactured are fully indigenized and there are no imported items in any content in any ofthe items. The machines have acquired a reputation for quality, providing products at

reasonable price to the satisfaction of the customers. Company enjoys all India sales through

a network of about 60 dedicated dealers.Products are sold at premium prices. KAMCO is also exporting products to certaincountries.

Power Tillers is equipment suitable for small farm holding for basic tilling operationsinstead of conventional plugging, the tiller breaks the soil into fine parts which is highly suitedfor paddy and wheat cultivation, originally of Japanese design, the machines has been modifiedlater to perfectly suit Indian conditions. The company plans to diversify its activities further in acquiring technical know-howand going into regular manufactures, under license of machines suitable for other agriculturalpurposes with the small and marginal farmers in mind.

4.2 VISION:

KAMCO with over 3 decades of engineering excellence stands as the number one powertiller manufactures in India. Not surprising, with four state of the art products, an innovation Rand D and stringer quality control systems rated as one of the best in the country. The technicallycompetent, dedicated management and workforce will go on to ensure that KAMCO shall beleader for several years to come.

4.3 MISSION:

a) To be an innovative, resourceful and profitable company.

b) To meet customer requirements of quality, service and price consistently.

c) To make "doing business with us easy" and delightful to our customers.

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d) To provide a congenial and entrepreneurial work environment in which employees

can respond to the needs of business and service earn fair reward and can be satisfied.

4.4 ACTIVITIES OF THE COMPANY

KAMCO manufacturing facilities include special purpose machines, specially built general machines and imported machines. The inspection facilities include modern inspection and existing equipment. KAMCO have their own metrology, calibration and engine test lab. Thefollowing are the main activities of the company.

a.Manufacturing and marketing of agricultural machines like power tillers, Tractors,Power reapers, Diesel engine etc.

b. Power tiller product at Athani and Palakkad units. Major components for power tillerare manufactured at Athani and all other component bought out from dedicatedvendors in India. There are around 250 vendors now.

c. Kalamassery unit produce engine for power tiller.

d. Power Reaper products at Mala.

e. Trading and manufacturing other farm machines.

4.5 PRODUCT RANGE

Today KAMCO's well known product range includes the KAMCO power tiller.KAMCO power reaper, KAMCO Agria Garden tiller and last but not the least, KAMCO DieselEngine, each Of these products are time tested and have proven their worth many times over fortheir owners.

4.5.1 KAMCO POWER TILLER

Popular as the complete farming unit it is just that it can deal with a host of farmingoperations like tilling, ploughing, pudding etc, single handedly. Also it has been designed to

function equally well in both wet and dry soil conditions. No wonder, it has retained its marketpositions as the number 1 power tiller in India for the last 3 decades, after marketing its debut inthe year 1973.

KAMCO Power tiller is a versatile machine primarily used for preparation of land forfarming operations with suitably designed accessories the machine can be used for a large number of specific operations like tilling, ploughing, pumping, pudding, leaching, hulling,

ridging etc.

4.5.2 KAMCO DIESEL ENGINE

It has been well received in the market owing to its virtually trouble-free performance.

KAMCO ER90 Engine is equipped with radiator and specially designed die cart multi-blade axialfan. The engine can operate continuously for several hours. It can be used as a prime movereither for stationery or for moving applications.

4.5.3 KAMCO AGRIA GARDEN TILLER

The petrol-engine, eco-friendly power tiller ideal for paddy, wheat cultivation, intercultivation applications, landscaping or gardening, potato harvesting and for land preparations athorticultural farms. A highly fuel-efficient and powerful equipment with easy-to-controloperations. Ideal for small and medium farmers.

4.5.4 KAMCO POWER REAPER

Powerful enough to reap one hectare of land within 3-4 hours. Prevents loss of grainswhile reaping. Gathers sheaves into neat windrows. Can reap farmlands at working pace. Can beeasily lifted and carried by two persons. It is used for ideal for paddy or wheat cultivation, intercultivation applications, various land preparations at horticultural farms, landscaping gardening,potato harvester. Individual inspection for conformity with specification. Every machineundergoes running test for several hours before sentencing as passed for delivery.

4.6 FUTURE PLANS

The organization has a number of diversification plans on the anvil. It is proposed tosetup research and development activities which will hopefully help it to

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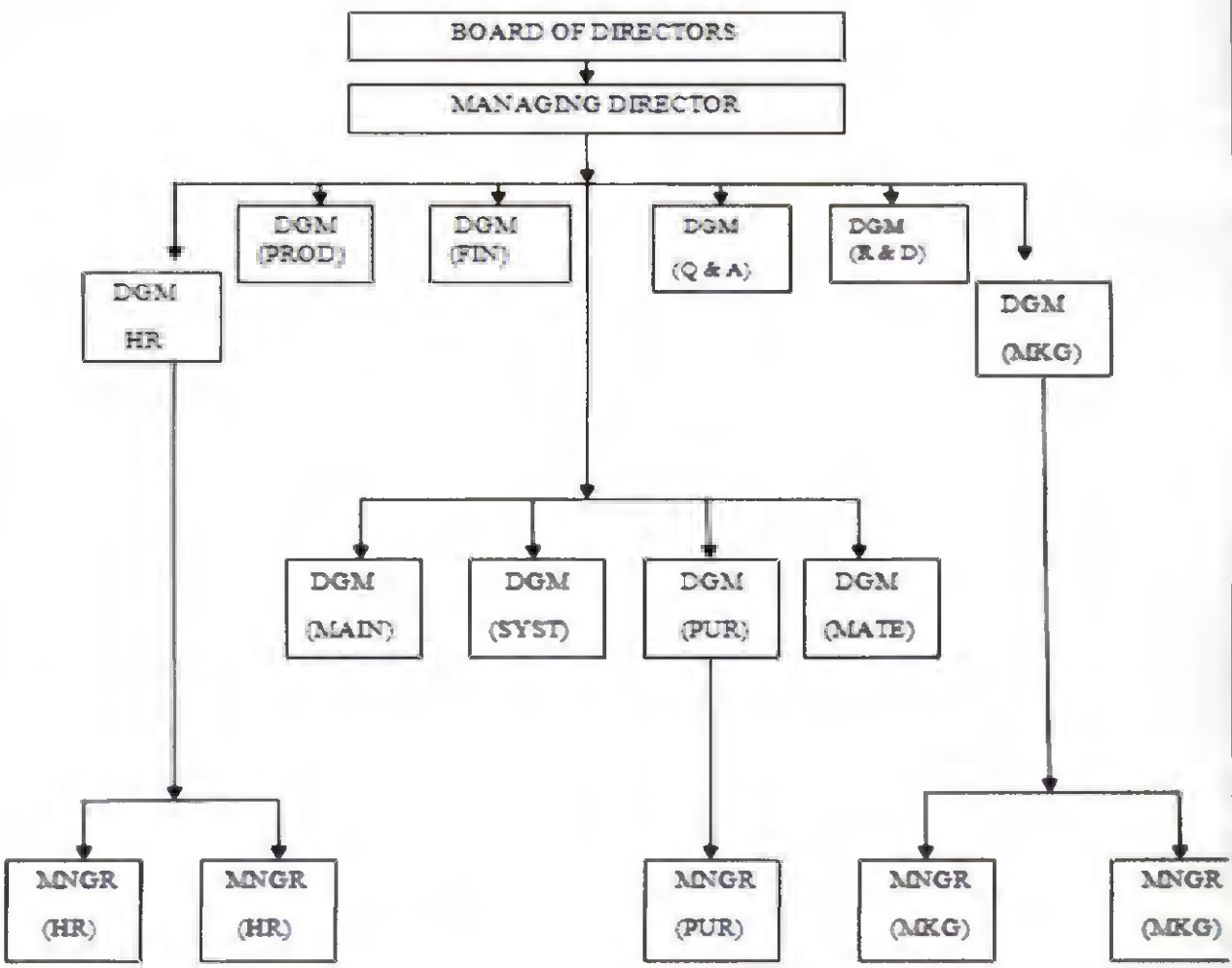
develop new productsin the future and live up to its promise, that its products will be "A boon for farmer and a gainfor the nation". The quality policy of KAMCO is "Total customer satisfaction through quality, products and services with improved technology and employee participation.

Fig 4.1 KAMCO ORGANISATIONAL CHART AT CORPORATE LEVEL



Source: KAMCO, Athani

DGM- Deputy General Manager	PUR- Purchase	MATE-Materials
MNGR-Manager	SYST-Systems	MKG-Marketing
PROD-Production Assurance	MAIN-Maintenance	Q & A-Quality

FIN-Finance HR-Human Resource

4.7 Departments in KAMCO

In **KAMCO** there are 11 Departments. They are as follows:-

1. Marketing Department
2. Finance Department
3. Human Resource Department
4. Materials Department
5. Purchase Department
6. Stores Department
7. Quality Assurance Department
8. Production Department
9. Maintenance Department
10. Research Development Department
11. System Department

4.7.1 MARKETING DEPARTMENT

Survival of any company depends upon marketing strategies adopted. This isparticularly important in the competitive era. Surviving from a lot of difficulties KAMCObecame no: 1 brand in the agricultural machinery market. Due to globalization KAMCOproducts have to compete with the international product. The product from China is the majortreat for the company because of its low price. But KAMCO is not ready to compromise with thequality of its products for reducing price. The marketing strategy wins the target. Consideringthe Indian market now there is only one competitor that now there is only one competitor that isVST tillers and tractors, Bangalore.

Even facing all these competitions companies marketing department plays a better role for getting good result. The strength of marketing department is25.Head of the marketing is the responsible to ensure that all the individuals in themarketing department follow all the marketing procedures. Entire marketing departments arefunctioning as a team. Main duties of the marketing departments are presales and after sales

services and these are looked upon by everyone in the department. So everyone is aware of thathappens in the marketing section. In the absence of one person other can looking to the problem.

4.7.1.1 Major Activities

Head of the marketing department on receipt of any order or enquiry passes it to concernoffers for further verification. All the orders including credit sales and entered into the computeras order booking.

1. All details such as purchase order no: date, model, quality ordered, delivery schedule, payments terms are verified.

2. Incase delivery schedule cannot be met as per the requirements of order it is brought tothe notice of the head of the department.

3. Schedule amendments if any are inform to the dealer or customer

4. The divisional head carries out one month wise order position review.

5. When no: of pending orders exceed available stock or production number tillerallotment register is updated and maintained.

6. Records of tiller transfer notes maintained by stores are available in the computer and the

department generates dispatch advice.

4.7.2 FINANCE DEPARTMENT

Financial performance of an organization is very important factor for the long termsurvival profitability of any organization. Finance is defined as the provision of money at thetime when it is required. Every enterprise whether big, medium, or small needs finance to carryon its operations to achieve its targets. It is livelihood of an enterprise. Without adequate financeno enterprise can possibly accomplish its objective. This department controls the overall financial transactions of the company.

It controlsthe receipts and payments of each and every activity for all the divisions. In KAMCO, financedepartment plays a major role because in public sector only very few companies and earningprofit KAMCO is a multi-storeyed multiunit organization. It means KAMCO have more than oneunit established with their own fund. Surprising thing is that KAMCO is giving dividend andcarrying profit for 22 years. The department keeps a record of everything concerning anyexpenses or income.

4.7.2.1 The Important functions are follows

a) Budget and Budgetary control

Annual budget are prepared for both capital and revenue, based on the requirements furnished by various units and departments. The departmental requisitions are analyzed and afterconsultation with the departmental heads and corporate divisional management group and it are finalized bases on the disposition of funds. Consolidated budgets are presented to managementor board for approval.Budgetary control of the company is exercised by the costing department of variousdepartments. The budget is reviewed half yearly and revised if found required based on thedeviations of actual from budget. Such changes are submitted to management or board through arevised budget foe approval. This revision is intimated to concerned department forimplementation.

b) Management of Receipts

A payment from dealers or customers reviewed through marketing department isacknowledged by issuing proper receipts. Customer wise or dealer wise accounting is adopted.Debits outstand department are informed to marketing department once in a month for furtheractions.Insurance, freight out ward, bank negotiations etc are accounted and maintained to revisethe cost of sales, daily sales proceeds in the sales counter and other receipts are verified andaccounted. Half yearly reconciliation of payments and receipts with dealer is prepared byaccounts department and settled with dealer.

c) Management of Payments

Subject to the availability of funds, payment commitments are honoured on due dates. Allthe payments are passed mainly on the basis of IGRR. Advance payments are settled within atime of 45 days. Non-receipts or delayed receipts extra are brought to the notice of stress forremedial actions. Payments are usually done by cheque or DD.

d) Auditing

Internal audit is mainly based on corporate functioning. Internal audit mainly takes carefor the 'CARO' requirements of company's act. 'Watch Dog' for an entire organization . Themain function of this department is to ensure that policy decisions of the management is strictlyfollowed by the functional departments and is verified by the internal audit.

e) Costing

Costing records are maintained as per the cost accounting rules. They are mainlysubjected to cost audit ordered by company law board. Costing department also advicesmanagement and departments, which are the potential areas of cost reduction. Mainly costingdepartments analyzes cost of productions on a yearly basis. Costing department advices accountsdepartments the cost of rejection as per warranty claims

f) Statutory Transactions

Sales tax, Income tax etc are issued and properly accounted and timely settlements aremade. Salary and other payments, recoveries and their remittance etc in the case of employeesare done in time.

g) Management Information System

1. Revenue and Expenditure
2. Salary period and disbursement
3. Non financial schemes
4. Allowances given
5. Cash Management
6. Pay roll

7. Capital Structure

4.7.3 HUMAN RESOURCE DEPARTMENT

Human recourse department deals with all the functions related to the human recoursesin an organization.

a) Identify human recourses requirements, job specifications, skill needs.

b) Evaluate and select suitable personnel

c) Maintain the competence of personnel through HRD method

d) A personnel record sheet is prepared of very personnel

e) New appointments are put on orientation training for one or two weeks duration

f) Service training is given to permanent employees

g) Department head will assess the training needs and forward it to HRD unit head.HRD committee will examine the training requirement forwarded to the HRD head.HRD committee will prepare training calendar. At the end of the year HRDdepartment will submit details of the training arranged to the MD and MR

h) On receiving training each employees of unit is required to submit the training

i) Report to HRD.

j) Heads of the units prepare an evaluation sheet every six months and is send to the HRD head.

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k) HRD or personnel and administration maintain personnel record sheetperiodically assesses by the HRD committee assess employee competence.

l) Evaluation of new employees after evaluation training is initiated by HRD.

Record Maintained in HRD

1. Personnel record sheet
2. Oriented training report
3. Training report
4. Evaluation sheet
5. Report to MR

4.7.4 MATERIALS DEPARTMENT

It deals with the Purchase of materials, which include purchase planning and selection ofvendors.

4.7.4.1 Functions

1. **Purchase planning**

a) In purchase planning first of all, based on production target annual budget is prepared.After this, worksheet is prepared.

b) Based on the worksheet, purchase proposal is made. f purchase proposal is for more than 1lakhs, signature of managing director should be made on it. If it is more than 75000, purchase committee should be signed on it. The purchase and DGM finance. If the amount is more than 35000 the signature of senior manager is there.

2. Selection of Vendors

For the suppliers approaching for registration, following will be applicable

1. The registration Form is issued to the supplier for filling up the details

2. These details are preceded and approved, to proceed further by Vendor development committee.

3.Technical personnel designated by HOD assess premises of the supplier.

4.The personnel who visit the premises fill up the vendor evaluation repor

5. After taking decision on the capability of the vendor based onvendor evaluation report they requested to supply samples for approval.

6. Then the samples are submitted to the Quality Assurance departmentat head office and based on their recommendations regardingsamples, decision is taken on ordering on them. They are registeredas vendors by the purchase or materials department at head office, as vendors by the purchase or materials department at head office.

7.The first purchase order is released on trial basis for small quantity.After satisfactory supply of trial order, they are included in theapproved vendor list and regular purchase order is released dependingon requirement of materials.

8. The head of materials department approves the vendor list.

4.7.5 PURCHASE DEPARTMENT

All other function other than the purchase planning and vendor selection is done by thepurchase department. After approving the vendor list by the materials department, the purchasedepartment then issues a purchase order containing department, the purchase department thenissues a purchase order containing details like material quality, rate payment terms, supplyschedule etc.

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For the purchase of other materials or office equipment, each department has to submit apurchase intend. The board of directors approves the purchase budget for each department at thebeginning of the year. All purchase has to be limited to the budget and are subject to approvedby finance department.Based on the requirement, an enquiry is made Quotations are obtained from all suppliersand a comparative statement is prepared. Once a supplier has been chosen, the purchase detailsare sent for intending and financial commitment is made for purchase of budgetary control.

4.7.5.1 Other functions performed by Purchase Department.

1. Ensuring that all raw materials, semi-finished, fully finished components is procuredfrom approved vendors.
2. Ensuring that the procurement action is taken in time by processing repeat orders ortender enquires whenever applicable.

3.Assessing vendor capability to effect supplies in accordance with purchase order meeting acceptable quality and delivers so that they can be listed as approved vendors.

4. Ensuring that the goods received are of consistent quality conforming to the standards or
Specifications of the purchase order

5.Providing feedback to the vendors for improving quality of supplies and materials.

6. Ensuring that the vendor's performance is recorded monitored and suitably graded.

7. If the inventory goes up beyond the permitted value, purchase department takes appropriate actions to bring down the inventory.

8. Purchase department should take appropriate actions in order to maintain the minimum

stock level.

4.7.6 STORES DEPARTMENT

The materials that received from the vendors are stored in the stores department.19employees working under this department. When the materials have been received by thegoods clerk according to the purchase order. It is passed on the store, along with the goodsinspection report. The store is a service department, headed by the general, who receives thematerials and issues them. They duty of the staff members I is not on by the receipt and issueof materials but also many other functions to be compiled with as his position is that notof managerial level.

4.7.6.1 Important Functions

1. Store materials for the company
2. Receipt and accounting of materials including stationary
3. Product delivery
4. Spare parts dispatch
5. Issue of product in FIFO

It keeps the following documents

1. Inspection and goods received report
2. Inter location stock transfer receipt stock issue or transfer note.
3. Stock return note
4. Inter location stock transfer issue
5. Stock issue cum delivery note
6. Bin card
7. Master record index for department quality manual amendments
8. Material presentation Tag
9. Material gate pass
10. Delivery note
11. Report to MRM or Management Review meeting
12. Tock issue or transfer request
13. Stick return request
14. Packing Slip

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The stores divided into two parts

1. Receiving Store
2. Stores for accepted parts or materials after inspection

4.7.7 QUALITY ASSURANCE DEPARTMENT

Quality assurance Department inspects the quality of materials or parts, which wasreceived from the vendors. Quality management is becomes a key variables in the strategicbusiness policy of the organization at present. Quality management is an important area whichwill require maximum attention of top management. The attitudes of quality such asperformance, features, conference, reliability, should be constantly evaluated and upgraded so asto cope with the current and future market demands.

Quality assurance clarifies the components into two critical component and non-criticalcomponents. Critical components are crank shaft, all engine parts, gear wheels etc. Non criticalcomponents are nuts, bolts and screws etc. The clarification is mainly for ignoring the practicaldifficulty in checking non critical components and only sample inspection in non-criticalcomponents. Practical difficulty in checking the non-critical component is the problem therefrom here the production department as their requirements takes the components. After getting afinished product from the assembly department for the final checking. If getting a finishedproduct from the assembly department for the final checking. If it is Ok it is gone to the store.From these the machine will enter into marker through dealers

a) Calibration cell: - Quality assurance Department is equipped with all modal facilities the company has calibration cell to check and correct the measurements of all measuring instruments.

1.Ensure the quality of line procedures.

2.Purchased products quality is assessed by quality assurance department.

3. Assembly line inspection done at each work centre.

4. Final inspection of the finished products is done.

5.Calibration is done by the Quality Assurance.

6.A standard committee consisting of the following officers will meet in the beginning of

the year upon approval of the budget and as end when required to assess the metrologyor measuring or testing equipments,

1. DGM(QA) - CONVENER
2. Department Head(QA) - MEMBER
3. Department Head - MEMBER
4. Department Head(Engineering) – MEMBER

4.7.8 PRODUCTION DEPARTMENT

Production Department is also known as works department. It is divided into Assemblyshop, Machine shop, and a small sub unit for painting which is a sub unit of assembly shop.Annual production is based on the budget this production figure is broken down intomonthly targets. Assembly of power tiller is done in separate assembly line viz, engine line, transmission line, tiller line. Parts required for assemblies are got through stock issue notes. Parts required forassembly at each work centre is located in bines at appropriate work section with indication
standard parts required by different work centers are kept in centralized places. Painted parts areobtained from the painting section.

1.Assembly is carried out as per process chart.

2. Work carried out in each work centers is recorded. In an assembly line record each assembly line where chassis or engine number of each assembly is noted.

3. After completion of each assembly line concerned machine verifies the assembly and sign the assembly tags with date.

4. At the end of each assembly chief mechanic of that line clears the assembly for the next assembly line.

5. Assembly rejections are removed from the work centre.

6. Tillers are offered for inspection to QA department along with tiller completion report.

7. Engine after inspection are handed back with finished tiller inspection report.

Divided into 3 sections

1. Assembling
2. Pre-treatment and Painting
3. Machine Shop

4.7.8.1 Functions:-

Assembly Shop

Assembly is one of the major sections in production department. The finished components aretaken from the stores and it is sent to assembly as required. The engine assembly is one of themain work in the assembly. After testing the assembled engines, it is sent to the painting section.Through different transmission in the assembly we get the finished products. In the power tillerhere using two types of engines (Diesel engines and DI engines)

Painting Booth

In KAMCO they are using a good advanced booth. After cleaning the components it willgo for painting through a conveyer belt and after painting it will go over through the belt. Mainly
they are using two colour for painting one is Ash and other is Post office red.

Machine Shop

Company has a machine shop which is producing 15 components. These are criticalcomponents. Company have a modern machine shop with special purpose machines whichensures conformity with prescribed quality standards. The materials purchased by the purchasedepartment, then sent to the stores from their materials to the QA department, it sent to theMachine shop. In the machine shop the process like milling, drilling, boring etc. are doing onmaterial to get the product which is used in

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the assembly. From the machine shop the finishedproducts are directly sent to the assembly only for the inspection in QA. From the QA it will besent to the stores.

4.7.9 MAINTENANCE DEPARTMENT

Maintenance Department deals with the maintenance of machine tools and equipment used forproduction.

4.7.9.1 Types of Maintenance followed in KAMCO

Mainly there are 4 types of Maintenance Management:-

1. Preventive Maintenance
2. Breakdown Maintenance
3. General Maintenance
4. Spare parts management

Spares and consumables required are procured as and when required. Review of spareparts and consumables is carried out once in a year. Shift arrangements are done by HOD ofmaintenance.In Preventive maintenance, schedule is prepared by head of the department and is givento concerned department and electrical or mechanical maintenance section. Electrician ormechanic under the supervision of change hand takes up the machines for preventivemaintenance.

All the machines and equipments are attended once in every month, defects notices ifany rectified. Head of the department carries out final checks.After carrying out preventive maintenance work the preventive maintenance checklist arefilled up by the electrician or mechanic and counter signed by charge hand or chief mechanicdepartment head reviews the reports every month.Monthly report is given to divisional head. Maintenance schedules are reviewed every 6months by divisional head.

In Breakdown Maintenance, maintenance or repair order is made by the concerneddepartment indicating the location of nature of faults and signed by the reporting officer.Maintenance order is received by the section head and handed over to the concerned chargehand for execution. After completion of the work the

operation is demonstrated and themechanic hands over the equipment to the concern department. Repair completion report is givento the concerned department.

1.Maintenance work is also done through outside agencies and the transactions arerecorded.

2.Machine breakdown data is analysed using Pareto's principle.

3. Spare parts maintenance is done once in a year

4.Areas covered by the maintenance department are electrical, substation, telephone system,

water supply system, welding operations and general maintenance.

5.Shift arrangements of the work are done by the HRD maintenance.

The maintenance motto of maintenance department is to minimize the down time andmake available all the machinery promptly. The main responsibility of electrical section isuninterrupted power supply and total preventive maintenance

4.7.10 RESEARCH AND DEVELOPMENT DEPARTMENT

KAMCO has a very intelligent research and development team. The R and D activities ofthe company are now being attached to the engineering departments. Government of India hadstipulated certain norms to meet the minimum performance standard for the power tiller in viewof the complaints of farmers on the performance of power tillers especially after the introductionof Chinese tillers. According all the power tiller manufactures have been advised to companywith the minimum performance standards to consider subsidy for the power tiller at the end ofthe final year. The modifications are implemented by delivering safety cover with in the recordtime and the tiller got tested and approved by central farm testing and training institute, Budniduring May-July 2001, Government of India had clearedtraining institute, Budni during May-July 2001, Government of India had clearedKAMCO power tiller meeting minimum standards in July 2001 for eligibility of subsidy.

4.7.10.1 Functions:-

1. Revise drawings for correction or improvement based on feedback from customer, feedback from production, purchase and Quality assurance departments.

2. This covers activities with regard to modifications for improvement to products andconsequent changes to the relevant drawings.

3. Keeping all drawings in safe custody, maintain them promptly and issue copies toindenting department

4.7.10 SYSTEM DEPARTMENT

This is the youngest department in the company. KAMCO is still in the process of developing a system whereby it can make optimum usage of IT recourses. At present KAMCOmakes use of a customized ERP package based on ORACLE. The package was developed and isimplemented in 2001-2002. The system department does not play a role in production planning.The module incorporated in ERP package used are the Finance Module, Marketing
Module, Purchase processing, and Inventory Module, Human Resource Management and the
Maintenance Module.

1. **Finance Module**
    a. Payroll and incentive administration
    b. Material purchases
    c. Sales
    d. Payables and Receivables
    e. Day to Day cash position reporting
    f. Individual bank wise balance reporting

2. **Marketing Module**
    a. Order booking
    b. Invoicing

c. After sales service

3. **Purchase Processing and Inventory module**
   a. Purchase processing
   b. Material requirements
   c. Inventory transactions
   d. Finished goods evaluation
   e. Material rejection

4. **Human Resource Management Module**
   a. Personal history including employee details and service details
   b. Payroll processing
   c. Training
   d. Attendance and incentives including Office time, leave etc

5. **Maintenance Module**
   a. Equipment maintenance
   b. Calibration

In KAMCO, the systems in all departments are connected through LAN.

CHAPTER V

Effectiveness of inventory management on working capital of Kerala Agro Machinery Corporation Ltd –An Analysis

The analysis is divided into two sections section A and section B. Section A is the analysis of policies in the KAMCO and section B is the analysis of the effectiveness of inventory management on working capital. The policies regarding the inventory management is examined by gathering information from each the heads of different department in KAMCO by using a structured interview schedule .The effectiveness of the inventory management and its impact on working capital is examined by gathering secondary information from the books of accounts and yearly reports from KAMCO. Ratio analysis is used to explain the phenomena of the study. Ratios such as inventory turnover ratio, ratio of raw materials to inventory, ratio of finished goods to inventory, ratio of total inventory to current asset, ratio of total inventory to sales, total inventory to net working capital ratio, working capital turnover ratio, current ratio, quick ratio, and profitability ratios is used to study the effectiveness of inventory management in working capital.

5.1Analysis of policies regarding the inventory management in KAMCO

Data required for analysing the policies regarding the inventory management of KAMCO were collected through a structured interview schedule from concerned officials. KAMCO follows certain policies regarding the procurement of raw materials, storage of goods, payment system, credit policies etc. The following are the details of the policies existing in the KAMCO related with the inventory management

5.1.1 Inventory management system and costing method

KAMCO uses many inventory management systems like JIT, ABC, VED, and FSN. Among them they mainly use JIT. ABC system is used for some materials, which value is the highest. VED and FSN uses mainly for spare parts. For inventory

management, they use FIFO (First In First Out) costing method for inventory management.

5.1.2 Procurement policy

They maintain a specific policy regarding the procurement of raw materials. They are following specific criteria for selecting suppliers who are supplying the raw materials to the KAMCO. At first they will advertise and then they accept the proposal from suppliers and then they will scrutinise among them and selects all the suppliers who par with their requirements like low cost and high quality. They will not compromise with the quality of the raw materials. They follow one time quality checking process, at the time of procurement of raw materials. They use their own fund for the procurement of raw materials.

5.1.3 Policy regarding purchase procedure and determination of ordering size

They maintain a separate department headed by a purchase manager for purchase of raw materials and consumables. They had a policy regarding the purchase of raw materials. They determine the ordering size according to information, collected from stores department. But they didn't use EOQ technique to fix the ordering size of the company. It is also noted that, they have no specific policy regarding the fixation of levels of inventory like minimum level; re-order level, maximum level and danger level.

5.1.4 Storage of raw materials, consumables and finished goods

They have some standard policies regarding the storage of raw materials; semi-finished goods and finished goods and it follows a scientific stock system. Hence, they use a qualified person as store manager for the effective functioning of the sore department. For the raw materials and consumables, they calculate the optimum level for one month and for the finished goods, it is usually seasonal but now it is for one month. And also there is a good computer system which enables to know the stock position of each inventory in KAMCO and they are not using any safety measures in the stores department.

5.1.3 Policy regards to the recovery from different consumers- Credit policy.

KAMCO follows a credit policy in which they have specific policies to each groups like government, private firms, public and others. They give maximum credit period of 90 days. They give credit on the basis of bank guarantee and other securities for all groups except government.

5.1.4 Policy regards to payment to various suppliers

KAMCO follows a credit policy in which they have specific policies to each groups like government, private firms, public and others. They give maximum credit period of 90 days. They give credit on the basis of bank guarantee and other securities for all groups except government.

5.1.5 Price level variations and policy measures

Price variations influence the purchase to some extend but since the price of finished goods are stable; they don't have any influence over them.

5.1.6 GST and its impact on inventory management

. Due to the recently introduced GST, the tax rate of finished has increased from 5% to 12%, as a result there was an increase in the price of finished goods, resulting to declaim in the turnover of KAMCO

5.1.7 Working capital estimation, mobilisation and its maintenance

The working capital of KAMCO is estimated according to the daily monitoring system. They use their own fund for day-to-day working of the company. They have not using outside fund. The main source of income is from interest received from the fixed deposit and sales. The excess fund maintained in the treasury.

5.1.8 Training programme on inventory management and working capital

The employee of KAMCO frequently attends various training programmes. KAMCO also facilitates training to its customers.

5.2 Ratio analysis

5.2.1 Inventory Turnover Ratio

The inventory turnover ratio is an efficiency ratio that shows how effectively inventory is managed by comparing cost of goods sold with average inventory for a period. This measures how many times average inventory is "turned" or sold during a period.

$$\text{Inventory turnover ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average inventory}}$$

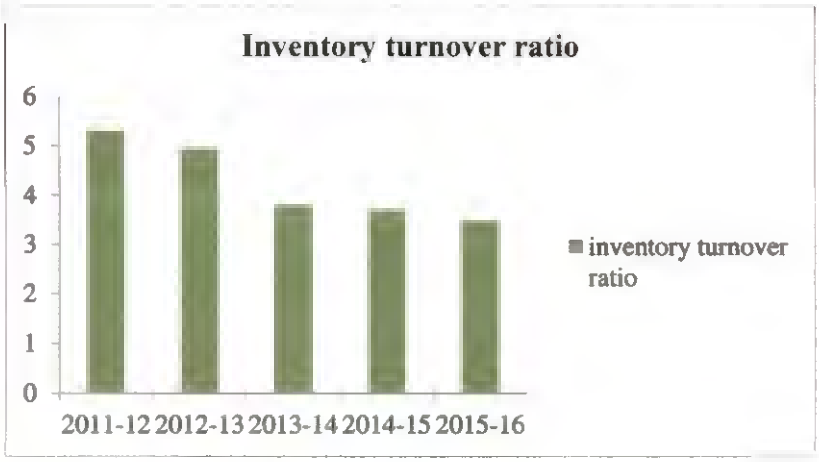
Table 5.1 Inventory Turnover Ratio

Year	Cost of goods sold (in lakh)	Average inventory (in lakh)	Inventory turnover ratio (%)
2011-12	15177.187	2861.64	5.3
2012-13	17314.158	3503.35	4.9
2013-14	16549.271	4364.519	3.8
2014-15	18817.613	5074.9	3.7
2015-16	16684.594	4796	3.5

Source: KAMCO, Athani.

Table 5.1 shows the inventory turnover ratio of KAMCO during the period of 2011-12 to 2015-16. The inventory turnover ratio in 2011-12, it starts increased to 5.3 because of sale of product was increased due to high demand. In 2012-13 it dipped in to 4.94 and in 2013-14 the ratio became 3.79. So regarding the turnover ratio it indicates a decreasing trend. A low inventory turnover ratio implies excessive inventory levels. This will leads to increase the working capital of the company. The decreasing trend of the inventory turnover Ratio is given in figure 5.1

Figure 5.1 Inventory Turnover Ratio



Source: KAMCO, Athani.

5.2.2 Inventory Conversion Period

$$\text{Inventory conversion period} = \frac{365}{\text{Inventory Turnover Ratio}}$$

Table 5.2 Table showing Inventory conversion period

Year	Number of Days	Inventory turnover Ratio	Period (Days)
2011-12	365	5.3	69
2012-13	365	4.9	74
2013-14	365	3.8	96
2014-15	365	3.7	99
2015-16	365	3.5	105

Source: KAMCO, Athani.

Table 5.2 shows the inventory conversion period of the company during 2011-12 to 2015-16. This indicates an increasing trend because in 2011-12 it was 69 days and in the last year it was increased to 105 days. The reason for high inventory turnover period is accumulation of stock it causes large amount of working capital

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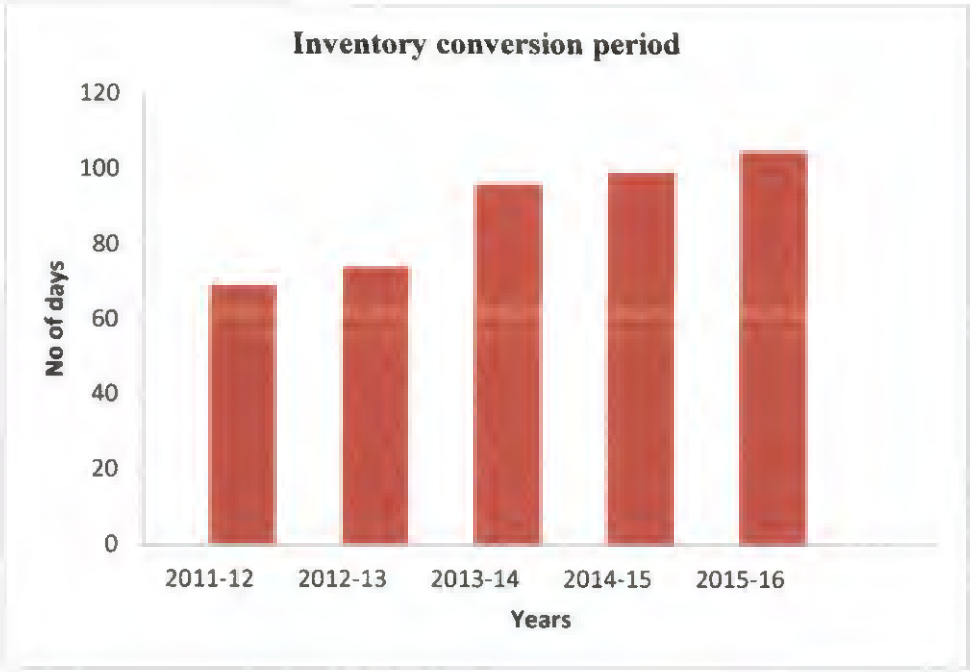
requirements. It shows that the inventory conversion period of KAMCO is not satisfactory

Figure 5.2 Inventory conversion period



Source: KAMCO, Athani.

5.2.3 Ratio of raw materials to inventory

Raw materials are important components of inventories. They are required to carry out production activities uninteruptly. The quantity of raw material required will be determined by the rate of consumption. Both over stocking and under stocking of raw materials will make problems in an organization. Ratio of raw material to inventory shows how much percentage of raw materials included in total inventories.

$$\text{Ratio of raw materials to inventory} = \frac{\text{Raw material}}{\text{Inventory}}$$

Table 5.3 Ratio of raw material to inventory

Year	Raw materials (Rs.in lakh)	Growth of Raw materials (Index)	Inventory (Rs.in lakh)	Growth of Inventory(Index)	Ratio of raw materials to inventory (%)
2011-12	1773.26	100	2861.64	100	61.9
2012-13	2274.06	128	3503.35	122	65
2013-14	2232.79	125	4364.519	152	50
2014-15	2091.84	117	5074.9	177	40
2015-16	2015.31	113	4796	167	42
CAGR	13.65%		67.59%		
AAGR	2.58%		10.8%		

Source: KAMCO, Athani.

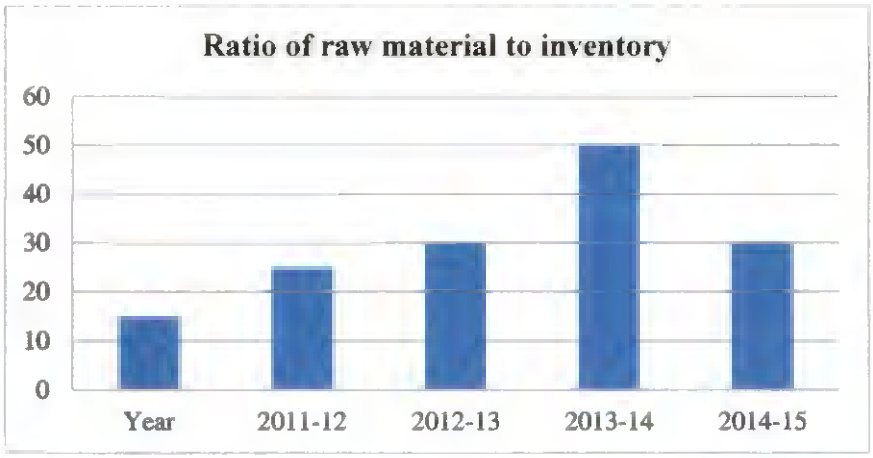
AAGR (Average Annual Growth Rate) =

((Ending value/ Beginning value)$\wedge$ $(\frac{1}{N})$ -1) *100)

CAGR (Compound Annual Growth Rate) =((Ending value/ Beginning value) -1) * 100)

Table 5.3 shows the ratio of raw material to the inventory. It reveals the relationship of raw material to the inventory. From 2011-12 to 2013-14 it shows an increasing trend in raw material and during the 2014-15 it decreased. In case of inventory, it shows a continuous over all the years except last year. The annual growth rate of raw material is 13.65%. It is the average increase in the value of rawmaterial over the five years from 2011-2016. CAGR of inventory is 67.59%.From the table we can, understand that there is a decreasing in the percentage of raw materials included in inventory.

Figure 5.3 Ratio of raw materials to inventory



Source: KAMCO, Athani.

5.2.4 Ratio of finished goods to Inventory

Finished goods are the goods which are ready for the consumers. The stock of finished goods provides a buffer between production and market. Ratio of finished goods to inventory shows the relationship between finished goods and inventory. It is amount of finished goods included in inventory.

$$\text{Ratio of finished goods to inventory} = \frac{\text{Finished goods}}{\text{Inventory}}$$

Table 5.4 Ratio of Finished goods to Inventory

Year	Finished goods(Rs.in lakh)	Growth rate of finished goods(Index)	Inventory (Rs.in lakh)	Growth rate of Inventory (Index)	Ratio of finished goods to Inventory (%)
2011-12	440.48	100	2861.64	100	15
2012-13	861.1	195	3503.35	122	25
2013-14	1273.15	289	4364.519	152	30
2014-15	2595.17	589	5074.9	177	50

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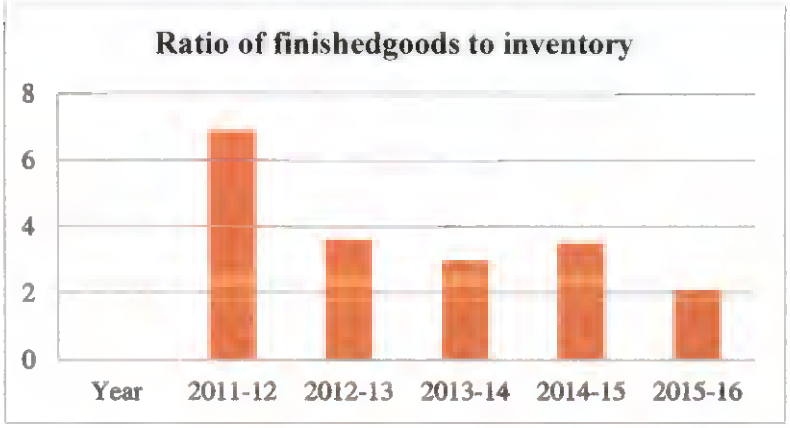
2015-16	1456.54	331	4796	167	30
CAGR	230%		67.59%		
AAGR	26.9%		10.8%		

Source: KAMCO, Athani.

Table 5.4 represents the ratio of finished goods to inventory .It represents the percentage of finished goods on total inventory.It shows a continues increase in the finished goods on inventory. The annual average growth rate of finished goods is 230 percent. This indicating increasing trend of finished stock in the company. This may due to the marketing problem of the company. Excess of finished stock leads to loss to the firm and it will reflect in the profit also.

Figure 5.4 Ratio of finished goods to inventory



Source: KAMCO, Athani.

5.2.5Composition of inventory

Inventory constitutes a very significant part of working capital or current assets in manufacturing organization. Inventory which consists of raw material components and other consumables, work in process and finished goods is an important component of 'current assets'. The following table shows the composition of inventory in KAMCO Ltd.

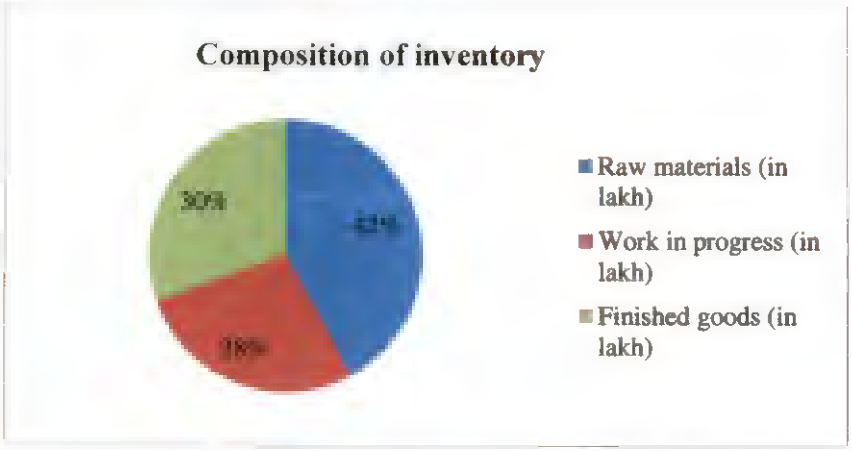
Table 5.5 Composition of inventory

Year	Raw materials (Rs.in lakh)	Growth of Raw materials(index)	Work in progress (Rs.in lakh)	Growth of Work in progress(Index)	Finished goods (Rs.in lakh)	Growth of Finished goods (Index)	Growth of total Inventory (Rs.in lakh)	Growth of Inventory (Index)
2011-12	1773.26	100	647.9	100	440.48	100	2861.64	100
2012-13	2274.06	128	368.19	57	861.1	195	3503.35	122
2013-14	2232.79	126	858.579	132	1273.15	289	4364.519	152
2014-15	2091.84	118	387.89	60	2595.17	589	5074.9	177
2015-16	2015.31	114	1324.15	204	1456.54	331	4796	168

Source: KAMCO, Athani.

Table 5.5 shows the composition of inventory of KAMCO Ltd. From this table it can be understand the major portions of inventory constitute raw materials (42%). Only 28% of inventory represents work in progress. Finished goods constitute 30 % in the total inventory.From the year 2012-13 to 2015-16 growth of raw material depicted a decreasing trend. The year 2011-12 to 2014-15 witnessed an increasing growth rate of finished goods. It increased from 100 (2011-12) to 589 (2014-15). But during 2015-16, there was a decline in the growth rate of finished goods (331). This shows the weakness of marketing policies adopted by KAMCO during 2011-12 to 2014-15

Figure 5.5 Composition of inventory



5.2.6Ratio of Total Inventory to Current assets

Inventory to assets ratio Inventory/Total Assetsshows the portion of assetstied up in inventory. Generally, a lower ratio is considered better. Accounts receivable turnover Net (credit) Sales/Average Accounts Receivable gives a measure of how quickly credit sales are turned into cash.

Ratio of inventory to current assets =Inventory/Current asset

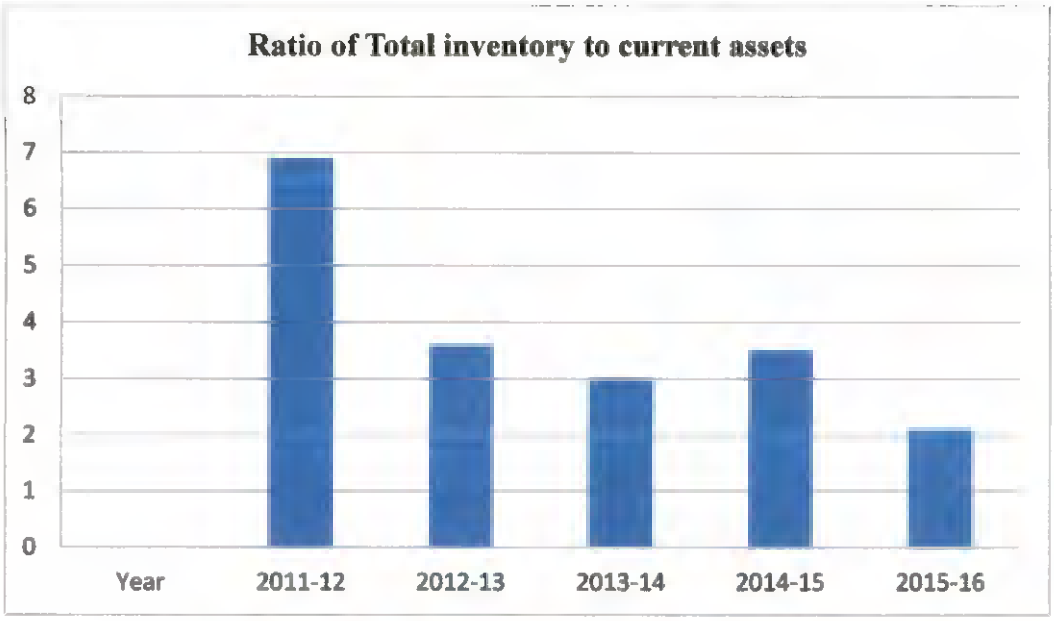
Table 5.6 Ratio of Total Inventory to Current Assets

Year	Inventory (Rs.in lakh)	Current Asset(Rs.in lakh)	Ratio of inventory to current assets
2011-12	2861.64	12580.373	0.23
2012-13	3503.35	14046.458	0.25
2013-14	4364.519	14931.175	0.32
2014-15	5074.9	17272.5	0.33
2015-16	4796	18222.201	0.33

Source: KAMCO, Athani.

From the table 5.6, it is understood that the ratio of total inventory to current assets is increasing. The ratio was 0.23 (23%) in the year 2011-12. But in 2013-14 it has increased up to 0.32(32%). During 2014-15 and 2015-16 it was 0.33 (33%). The proportion of inventory in current asset is increased year to year. That means liquidity is reducing.

Figure5.6 Ratio of Total Inventory to Current Assets



Source: KAMCO, Athani.

5.2.7 Ratio of Total inventory to Sales

Total inventory to sales ratio establish the relationship of inventory and sales. Increase in volume of sales requires increase in size of inventory.

Total inventory to sales ratio = Total inventory/ Sale

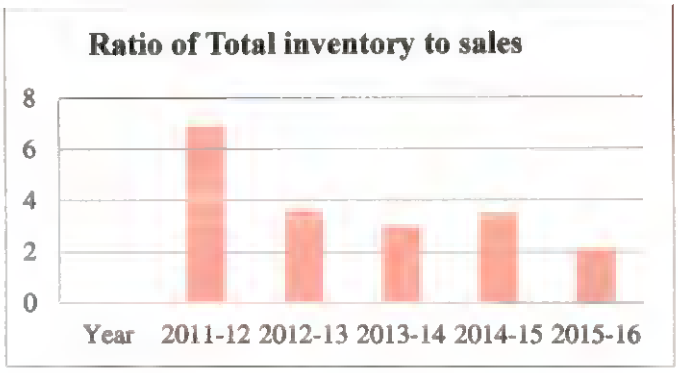
Table 5.7 Ratio of Total inventory to Sales

Year	Inventory (Rs.in lakh)	Growth of Inventory (Index)	Sales (Rs.in lakh)	Sales Index value	Ratio of Total inventory to sales
2011-12	2861.64	100	16313.49	100	0.2
2012-13	3503.35	122	17965.72	110	0.2
2013-14	4364.51	152	17063.13	104	0.3
2014-15	5074.9	177	19518.36	119	0.3
2015-16	4796	167	17044.89	104	0.3
CAGR	67.59%		4.48%		
AAGR	10.8%		0.8%		

Source: KAMCO, Athani.

Table 5.7 shows an increasing trend in the ratio of total inventory to sales in the financial year 2015-16. Increase in volume of sales requires increase in size of inventories. In 2011-12 and 2012-13 the ratio was 0.2.During2013-14, 2014-15, and 2015-16 it is stable in nature as 0.3 respectively. The average annual growth rate of inventory is 10.8 per cent, it shows high growth rate. In the case of sales, there is a low rate of growth rate i.e., 0.8 per cent. It means less sales and high inventory.

Figure 5.7 Ratio of Total inventory to Sales



Source: KAMCO, Athani.

5.2.8 Total Inventory to Net Working capital ratio

The inventory to working capital ratio measures how well a company is able to generate cash using working capital at its current inventory level.

$$\text{Total inventory to working capital ratio} = \frac{\text{Total inventory}}{\text{Working capital}}$$

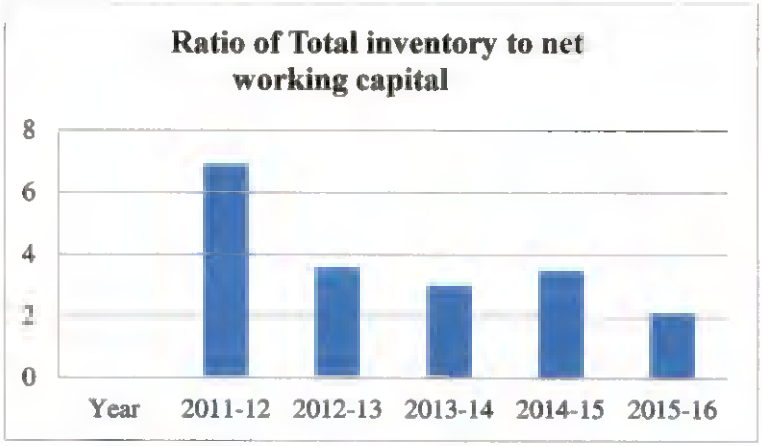
Table 5.8 Total inventory to Net working capital Ratio

Year	Inventory (Rs.in lakh)	Growth of Inventory (Index)	Net Working capital(Rs.in lakh)	Growth of Net working capital (Index)	Ratio of inventory to Net working capital
2011-12	2861.64	100	7949.606	100	0.4
2012-13	3503.35	122.42	7868.77	98.9	0.45
2013-14	4364.519	152.5	8341.755	104.9	0.52
2014-15	5074.9	177.34	9164.18	115.27	0.55
2015-16	4796	167.5	9632.04	121.16	0.49
CAGR	67.59%		21.16%		
AAGR	10.8%		3.8%		

Source: KAMCO, Athani.

Table 5.8 indicates an increasing trend in the first four years. In the last financial year the ratio was decreased from 0.55 to 0.49. It shows that the relationship of inventory and the working capital. Inventory influences the working capital of the company and increasing working capital leads to aexcess of working capital may result in unnecessary accumulation of inventories. It may cause to the profitability of the company. The average annual growth rate of working capital is 3.8 per cent.

Figure 5.8 Total inventory to net working capital Ratio



Source: KAMCO, Athani.

5.2.9 Working capital Turnover Ratio

The working capital turnover ratio is used to analyze the relationship between the money used to fund operations and the sales generated from these operations. This ratio shows the number of times working capital is turned over in a stated period. If the ratiois higher, the investment will be lower in working capital and the profit will increase. However, a very high turnover of working capital is a sign of over trading and may put the concern into financial difficulties. On the other hand, a low working capital turnover ratio indicates that working capital is not efficiently utilized.

$$\text{Working Capital Turnover Ratio} = \frac{\text{Sales}}{\text{Net working capital}}$$

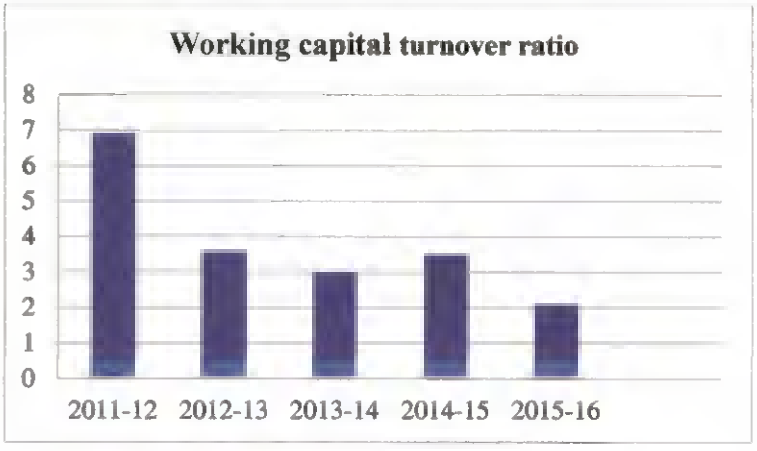
Table 5.9 Working capital Turnover Ratio

Year	Sales(Rs.in lakh)	Net Working capital(Rs.in lakh)	Working capital turnover ratio
2011-12	16313.497	7949.606	2.05
2012-13	17965.723	7868.77	2.28
2013-14	17063.135	8341.755	2.05
2014-15	19518.364	9164.18	2.13
2015-16	17044.899	9632.04	1.8

Source: KAMCO, Athani.

From the table5.9, we can understand the inefficient use of working capital in the firm. In the year 2011-12, the ratio was 2.05 and next year it was slightly increased to 2.28. And the last year it was 1.8. Higher working capital ratio indicates the efficient utilization of working capital and low ratio indicates inefficient or ineffective utilization of working capital. The standard working capital turnover ratio is 7 or 8 times. The low ratio is not favorable to the business.

Figure 5.9 Working capital Turnover Ratio



Source: KAMCO, Athani.

5.2.10 Working Capital Conversion Period

The working capital conversion period is essentially the time period during which a company must invest cash while it converts material into sales.

$$\text{Inventory conversion period} = \frac{365}{\text{Working capital turnover Ratio}}$$

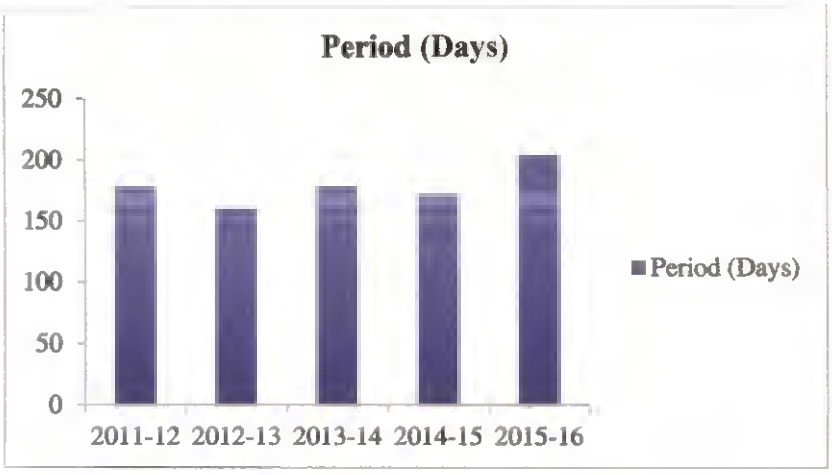
Table 5.10 Working Capital Conversion Period

Year	Number of Days in an year	Working capital turnover ratio	Period (Days)
2011-12	365	2.05	178
2012-13	365	2.28	160
2013-14	365	2.05	178
2014-15	365	2.13	171
2015-16	365	1.8	203

Source: KAMCO, Athani.

Table 5.10 shows an increasing trend because in the year 2011-12 was 178 days that means around 6 months and in the last financial year it was increased to 203 days. The reason for high working capital turnover period is accumulation of stock it causes large amount of working capital requirements. The working capital conversion period of KAMCO is not satisfactory. The company should take necessary action for increase working capital turnover ratio.

Figure 5.10 Working Capital Conversion Period



Source: KAMCO, Athani.

5.2.11 Current Ratio

It is the most widely used ratio. It is the ratio of current assets to current liabilities. It shows firm's ability to cover its current liabilities with its current assets. Generally 2:1 is considered as ideal ratio for a concern.

Current Ratio = Current Assets / Current Liabilities

Table 5.11 Current Ratio

Year	Current assets	Current liabilities	Current ratio
2011-12	10686.84	2737.234	3.90
2012-13	11706.64	3837.863	3.05
2013-14	12796.77	4455.015	2.87
2014-15	14969.48	5805.298	2.58
2015-16	15693.82	6061.78	2.58

Source: KAMCO, Athani.

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Table 5.11 shows the current ratio of the firm during the five years. The satisfactory level of current ratio is 2:1.It reveals that the ratio is higher than the satisfactory level. This indicates that the financial position of the company is satisfactory.

5.2.12 Quick Ratio

Quick ratio is also known as acid test ratio. It establishes a relationship between quick assets and the current liabilities. Cash is the most liquid asset. It is calculated by dividing quick assets by current liabilities. It shows a firm's ability to meet current liabilities with its most liquid assets.1:1 ratio is considered ideal ratio for a concern because it is wise to keep the liquid assets at least equal to the liquid liabilities at all times.

Quick ratio = Quick assets / Current liabilities

(Quick assets = Current assets – Inventory)

Table 5.12 Quick Ratio

Year	Quick Assets(Rs.in lakh)	Current Liabilities(Rs.in lakh)	Quick Ratio
2011-12	7825.2	2737.234	2.86
2012-13	8203.29	3837.863	2.14
2013-14	8432.251	4455.015	1.89
2014-15	9894.58	5805.298	1.70
2015-16	10897.82	6061.78	1.80

Source: KAMCO, Athani.

Table 5.12 shows the relationship between quick assets and the current liabilities. The satisfactory level of quick ratio is1:1. This table reveals that the quick ratio for the five years is above 1:1. This indicates that the company has a good liquid position, but it may affect the profitability of the organization.

Profitability Ratios

The ultimate aim of any business enterprise is to earn maximum profit with minimum cost. Lord Keynes remarked, 'Profit is the engine that drives a business enterprise'. The term profitability refers to the ability of a firm to earn income. The profitability of a firm can be easily measured by its profitability ratios. There are two types of profitabityratios. First, profitability based on sales and the second is profitability based on investment. Here for the purpose of analysis, profitability ratios based on sales is used. Important profitability ratios are Gross profit ratio, Net profit ratio and operating profit ratio.

5.2.13 Gross profit ratio

Gross profit ratio is one of the most widely used ratios. This is more useful in wholesale and retail trading concerns. It indicates the efficiency of production or trading operations. In other words, this ratio measures the margin of profit available on sales. It is useful in fixing the price of the products. In short it measures the efficiency of production/purchase as well as pricing. It is calculated as follows:

Gross Profit Ratio = (Gross profit/ Net sales) * 100

Gross profit = Net sales – Cost of goods sold

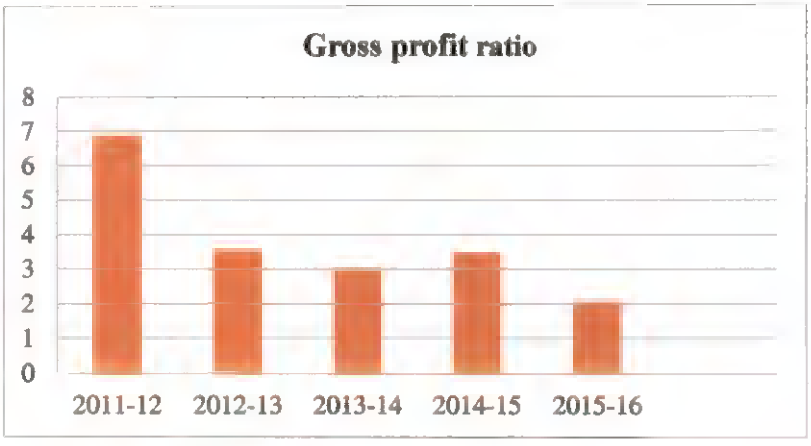
Table 5.13 Gross profit ratio

Year	Net sales (Rs.in lakh)	Cost of goods sold (Rs.in lakh)	Gross Profit (Rs.in lakh)	Gross profit Ratio (%)
2011-12	16313.49	15177.18	1136.3	6.9
2012-13	17965.72	17314.15	651.56	3.6
2013-14	17063.13	16549.27	513.86	3.0
2014-15	19518.36	18817.61	700.75	3.5
2015-16	17044.89	16684.59	360.30	2.1

Source: KAMCO, Athani.

Table 5.13 shows the gross profit ratio of KAMCO Ltd. It indicates a decreasing trend in the gross profit. The ratio shows the efficiency of production and it measures the margin of profit available on sales. In the last year the sales become decreased and it affects the gross profit of the company. The ratio become 2.1.So sales influence the gross profit of the company and here the marketing problem of product may the reason for this variation.

Figure 5.13 Gross Profit Ratios



Source: KAMCO, Athani.

5.2.14 Net Profit Ratio

Net profit ratio is the ratio of net profit earned by a business and in its net sales. It measures overall profitability.Net Profit Ratio can be calculated in two ways. One is to take Profit before Tax (PBT).The other is to take Profit after Tax (PAT).Here, net profit before tax is used for calculation purpose. These are shown as follows:

Net Profit Ratio = (Net Profit/ Net Sales)*100

(PBT/ Net sales)*100

(PAT/Net sales)*100

Table 5.14Net profit Ratio

Year	Net sales	Net profit	Net profit ratio
2011-12	16313.49	65156387	399401.9
2012-13	17965.72	51386160	286023.4

2013-14	17063.13	70074915	410680.3
2014-15	19518.36	36030146	184596.2
2015-16	17044.89	24831021	145680.1

Source: KAMCO, Athani.

Table 5.14 shows the net profit ratio of KAMCO Ltd. It depicts a fluctuating trend, and during the year 2011-12, net profit ratio was399401.9, then it decreased to 286023.4 and then improved to 410680.3 in 2013-14. And in 2015-16, it again diminished to 145680. In the last year the sales become decreased and it affects the net profit of the company. So it clearly understands that sales effect the profitability of the organization and here the marketing problem of product may the reason for this variation.

Degree of Relationship between inventory conversion period and working capital conversion period

Correlation is a statistical tool which used measure the degree of relationship between inventory conversion period and working capital conversion period. In positively correlated variables, the value increases or decreases in tandem. In negatively correlated variables, the value of one increases as the value of the other decreases.

Table 5.15 Co-efficient of correlation between inventory conversion period and net working capital conversion period

Year	Inventory conversion period (in days) X	Working capital conversion period (in days) Y	X^2	Y^2	XY
2011-12	69	178	4761	31684	12282
2012-13	74	160	5476	25600	11840
2013-14	96	178	9216	31684	17088
2014-15	99	171	9801	29241	16929
2015-16	105	203	11025	41209	21315
Total	$\sum X=443$	$\sum Y=890$	$\sum X^2=40279$	$\sum Y^2=159418$	$\sum XY=79454$

Source: KAMCO, Athani.

Formula:

$$R = \frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{[n\sum X^2 - (\sum X)^2]}\sqrt{[n\sum Y^2 - (\sum Y)^2]}}$$

$$= \frac{5(79454) - (443)(890)}{\sqrt{[(5*40279) - (443)^2]} * \sqrt{[(5*159418) - (890)^2]}}$$

$$= \frac{397270 - 394270}{\sqrt{201395-196249} * \sqrt{797090 - 792100}}$$

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$$= \frac{3000}{\sqrt{5146} * \sqrt{4990}}$$

$$= \frac{3000}{5112} = 0.6$$

Here the correlation coefficient is 0.6. There is a high positive correlation coefficient between inventory conversion period and net working capital conversion period. That means the changes in inventory conversion period will positively affect the net working capital of KAMCO Ltd. So, increase in inventory conversion period causes increase in net working capital of KAMCO Ltd.

CHAPTER VI

SUMMARY OF FINDINGS,SUGGESTIONSANDCONCLUSION

The study entitled 'The effect of inventory management on working capital of KAMCO Ltd. was undertaken with the objective to study the efficiency of inventory management followed by the institution. Both primary and secondary data were used for the study. Primary information regarding the inventory management policies of the KAMCO were collected from the concerned officials. Secondary data regarding the financial parameters were collected from the monthly reports and accounts of KAMCO from 2011-12 to 2015-16. The effect of inventory management on working capital of KAMCO was examined with the help of different statistical tools like ratio, index, percentage analysis, annual average growth rate, compound average growth rate, and correlation.

6.1 Findings of the Study

The major findings of the study are summarised below:

1. KAMCO uses many inventory management systems like JIT, ABC, VED, and FSN. Among them they mainly use JIT. ABC system is uses to some materials, which value is the highest. VED and FSN uses mainly for spare parts. For inventory management, they use FIFO (First In First Out) costing method for inventory management.

2. They maintain a specific policy regarding the procurement of raw materials. They are following specific criteria for selecting suppliers who are supplying the raw materials to the KAMCO. They will not compromise with the quality of the raw materials. They follow one time quality checking process, at the time of procurement of raw materials. They use their own fund for the procurement of raw materials.

3. They had a policy regarding the purchase of raw materials. They determine the ordering size according to information, collected from stores department. But they have no specific policy regarding the fixation of levels of inventory like minimum level; re-order level, maximum level and danger level.
4. They have some standard policies regarding the storage of raw materials; semi-finished goods and finished goods and it follows a scientific stock system. Hence, they use a qualified person as store manager for the effective functioning of the sore department.For the raw materials and consumables, they calculated the optimum level for one month and for the finished goods, it is usually seasonal but now it is for one month.

5. KAMCO follows a credit policy in which they have specific policies to each groups like government, private firms, public and others. They give maximum credit period of 90 days. They give credit on the basis of bank guarantee and other securities for all groups except government.

6. KAMCO follows a credit policy in which they have specific policies to each groups like government, private firms, public and others. They give maximum credit period of 90 days. They give credit on the basis of bank guarantee and other securities for all groups except government.

7. Price variations influence the purchase to some extend but since the price of finished goods are stable; they don't have any influence over them. Due to the recently introduced GST, the tax rate of finished has increased from 5% to 12%, as a result there was an increase in the price of finished goods.

8. They use their own fund for day-to-day working of the company. They have not using outside fund. The main source of income is from

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interest received from the fixed deposit and sales. The excess fund maintained in the treasury.

9. The employee of KAMCO frequently attends various training programmes. KAMCO also facilitates training to its customers.

10. During the period, 2011-12 to 2015-16, the inventory turnover ratio decreased from 5.3 to 3.4 and the inventory conversion period increased from 69 to 105 days. This depicts the existence of excess inventory in the KAMCO Ltd. that means they are not efficiently using the stock /inventory and investing more on inventory.

11. Raw material, work in progress and finished goods are the three major components of inventory. It is observed that raw material constitutes 42% of inventory followed by finished goods (30%) and work in progress (28%).From the year 2012-13 to 2015-16 growth of raw material depicted a decreasing trend. The year 2011-12 to 2014-15 witnessed an increasing growth rate of finished goods. It increased from 100 (2011-12) to 589 (2014-15). But during 2015-16, there was a decline in the growth rate of finished goods (331). This shows the weakness of marketing policies adopted by KAMCO during 2011-12 to 2014-15.

12. The ratio of total inventory to current assets shows a positive relationship, which means increase in inventory level, will lead to increase in current asset. Along with this the proportion of inventory in current asset is also increasing. Hence, liquidity in current asset will reduce.

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13. The ratio of total inventory to working capital indicates an increasing trend in the period from 2011-12 to 2014-15.In theyear(2015-16) the ratio decreased from 0.55 to 0.49.Increase in inventory leads to increment in working capital, but it may affect the profitability of the company.

14. During the period, 2011-12 to 2015-16 working capital turnover ratios decreased from 2.05 to 1.8 respectively and in these periods the working capital conversion period increased from 178 to 203 days. While compared to the standard working capital turnover ratio, KAMCO's working capital turnover ratio shows comparatively very low.

15. Current ratio of the KAMCO shows a decreasing trend, but it depicts that the ratio is higher than the satisfactory level. The satisfactory level of current ratio is 2:1.As the current ratio is more than standard level; it may affect the profitability of the company.

16. Regarding the gross profit ratio of the KAMCO, it shows a decreasing trend. During the period 2011-12 to 2015-16 it decreased from 6.8 to 2.1. It may due to the inefficient use of inventory and also decrease in the level of sales.

17. Net profit ratio of KAMCO depicts a fluctuating trend, and during the year 2011-12, net profit ratio was 399401.9, then it decreased to 286023.4 and then improved to 410680.3 in 2013-14. And in 2015-16, it again diminished to 145680. In the last year the sales become decreased and it affects the net profit of the company.

18. It is a high positive correlation coefficient between inventory conversion period and net working capital conversion period. That

means the changes in inventory conversion period will positively affect the net working capital of KAMCO Ltd. This will leads to excess inventory and also increase in working capital.

6.2 Suggestions

1. For managing the inventory system effectively, they have to strictly follow the policies regarding the inventory management system like JIT, ABC, VED and FSN to the proper group of materials.
2. They should refix the levels of inventory management the levels of inventory management like minimum level; re-order level, maximum level and danger level.
3. They should use EOQ (Economic Ordering Quantity) system for procurement of materials.
4. For eliminating the excess inventory in the company, they should implement some policies regarding the marketing of products for the promotion of products.

6.3 Conclusion

This study was to analyse the policies regarding the inventory management and the effectiveness of inventory management in working capital of KAMCO. The study reveals that, they follow policies regarding the procurement, purchase procedure storage of raw materials, consumables and finished goods, credit policy, payment policy etc. But there is excess inventory and delay in the conversion period of inventory. The reason for this is the improper implementation of policies regarding the inventory management and they don't give adequate promotion for their products. In order to solve these issues, strict implementation of policies should be ensured. And refix the levels of minimum, re-order, maximum and danger levels of inventory. They should use EOQ for the procurement of materials for reducing the excess stock in inventory.

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KERALA AGRICULTURE UNIVERSITY

College of Co- operation, Banking and Management

Vellanikkara, Thrissur.

MBA IN AGRI BUSINESS MANAGEMENT

SCHEDULE TO COLLECT POLICIES OF INVENTORY MANAGEMENT IN KAMCO

Name :

Designation:

Department:

1. What are the inventory management systems used in KAMCO?

   ABC ☐ VED ☐ FSN ☐ EOQ ☐

2. What inventory costing method does the campus employee?

   FIFO ☐ LIFO ☐ AVCO ☐

3. Do you maintain a specific policy regarding the procurements of raw materials?

   Yes ☐ No ☐

4. Do you follow any criteria/ procedures for selecting suppliers who are supplying the raw materials to the KAMCO?

   Yes ☐ No ☐

5. "Company follow a standard rules for the quality of raw materials while procurement period"?

Yes No

6. Is there any separate department for the procurement of raw materials?

Yes No

7. Will you use EOQ model for procurement of raw materials for the company?

Yes No

8. If not, what other method is used for determining line size of the order for procurement?

9. Will you get sufficient funds from financial institutions for buying the raw materials?

10. Do you have standard policies regarding the store system of inventory?

Yes No

11. Have you calculated the holding cost of inventory at the store?

12. Have you calculate the optimum level of inventory – raw materials, finished goods, consumables in the company?

13. Have you determine the minimum level, re-odering level, Maximum level and danger level of inventory?

14. What is the lead time of inventory?

.....

.....

15. Do you have scientific stock system?

Yes ☐ No ☐

16. Do you have store manager in the required personnel qualification in scientific inventory management?

Yes ☐ No ☐

17. Will the stock position of each inventory is known at your computer system?

Yes ☐ No ☐

18. Do you maintain any safety measures regarding protecting of inventory in store?

Yes ☐ No ☐

19. Is there any payment policy?

Yes ☐ No ☐

20. What are the systems of collecting the money from different groups?

Cash ☐

Cheque ☐

Bills ☐

Fund transfer ☐

Any other ☐

21. Will you offer any discount or offer to customers?

Yes ☐ No ☐

22. Will you avail the qty discount / cash discount for bulk production of raw materials?

.....

....

23. Will you make use of the discounts/rebate to the suppliers of raw materials?

.....

24. How the price level variations affect your inventory purchase?

.....

25. How the price level variations affect the sale of finished goods?

.....

26. Will you make credit policy?

27. Do you have specific credit policy?

a) To govt. ☐
b) To private firm ☐
c) To public firm ☐
d) To others ☐

28. How many days credit you allow for each groups?

.....

29. What are the terms and conditions to avail the loan?

30. How the present GST affects the KAMCO purchase and sale?

31. How the excess fund is managed?

Treasury ☐
Share ☐
Bank ☐
Fixed assets ☐

32. How you maintain the working capital

Cash in hand ☐
Stock ☐

Receivables

Cash at bank ☐

33. What is the frequency of maintaining the working capital? (Weekly, monthly, quarterly, yearly, semi annual)

34. How will you mobilize the working capital required for KAMCO?

.....

.....

35. How will you determine the timing of working capital requirement for KAMCO?

36. . Do you attend any training program on
    i) cash management
    ii) receivables management
    iii) payables management
    iv) store management
    v) finance management
    vi) inventory management

37. Does KAMCO offer any programme in the above ones?